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# **FAVOURITE PRESCRIPTIONS**





*The Practitioner Handbooks*

# FAVOURITE PRESCRIPTIONS

*Edited by*

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## FOREWORD

BY SIR HUMPHRY ROLLESTON, Bt.,  
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THIS series of eighteen articles on hospital pharmacopœias, originally published in *The Practitioner*, presents the results of long experience about the popularity and efficiency, at any rate in the relief of symptoms, of medicines among the patients in the great hospitals of this country. Accounts are given of the favourite prescriptions in the pharmacopœias of St. Bartholomew's, the oldest hospital (1133) in London, which started its first pharmacopœia in 1743, of the London, the largest teaching hospital in the Metropolis, which, founded in 1740, lost little time in following suit nine years later, of the Royal Infirmary of Edinburgh, the largest teaching hospital in the British Isles, which first opened its doors for six in-patients in 1729 and brought out its *Pharmacopœia Pauperum* in 1752, and of the Dublin Hospitals. Prescriptions thus originating locally have sometimes spread widely and become justly famous : from the London Hospital, Scott's (James and John) dressing (Ung. hydrarg. co.) and Sir Jonathan Hutchinson's pill (hydrarg. et ipecac. co.) have a world-wide reputation, and "Gee's linctus" (Linctus camphor. co., 1888) has spread from St. Bartholomew's Hospital much further than St. George's Hospital where the somewhat similar Linctus morphinæ hydrocyanicus, was known as (J.W.) "Ogle's drops" (p. 73). These preparations prove the value of empirical combinations of drugs,

## FOREWORD

and, though somewhat minor achievements, incidentally help to keep green the memory of men great in their generation. Some, as Dr. Cecil Wall remarks (p. 55), are examples of formulæ which can be justified only by the results of practical experience. These records also illustrate the fluctuating phases of medical practice, and recall "Good Remedies—out of fashion," the title of an address in 1883 by the late C. J. Hare, Physician to University College Hospital, in which the disuse of emetics in acute bronchitis, and of certain purgatives, such as cream of tartar and Epsom salts, was much deplored. A sign of the present times is a diminution in polypharmacy and in the art of "elegant" prescribing, which has coincided with, and, it is to be hoped, is largely due to, the scientific guidance of pharmacology towards really specific remedies.

Besides the pharmacopœias of the large general hospitals those of six special hospitals in London are described:—the Brompton Hospital for Consumption and Diseases of the Chest; the National Hospital for the Relief and Cure of Diseases of the Nervous System, Queen Square; the Hospital for Tropical Diseases; the Hospital for Sick Children, Great Ormond Street; St. John's Hospital for Diseases of the Skin; and the Central London Throat, Nose, and Ear Hospital. An account is also given of the National Formulary for National Health Insurance Purposes, which in 1933 passed into a second edition so as to correspond with the latest edition of the British Pharmacopœia.

The Editors wish to acknowledge the help given by Mr. R. Scott Stevenson in the initiation and general planning of the articles.

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# **FAVOURITE PRESCRIPTIONS**





# FAVOURITE PRESCRIPTIONS

## I.—THE PHARMACOPŒIA OF ST. BARTHOLOMEW'S HOSPITAL

BY P. HAMILL, M.D., D.Sc., F.R.C.P.

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THE study of hospital pharmacopœias and formularies is of great interest, and sheds some light on the trends of medical teaching and practice. In a large institution where many hundreds of prescriptions are dispensed daily and where there are relatively few prescribers the same prescription will inevitably be repeated frequently and the dispenser will keep stock mixtures ready. The preparation of a hospital pharmacopœia or formulary is a natural sequence. The formulæ of different prescribers are combined and simplified and the resulting pharmacopœia is a compromise between the practice of several individuals, pharmaceutical convenience and cost.

The British Pharmacopœia, in common with the pharmacopœias of other countries, has tended to become at each revision more and more a book of standards for substances to be used in medicine and less and less a formulary; hence the pharmacopœias of the large hospitals with medical schools have a special importance since students regard them as text-books of prescribing and continue to use their well-tried formulæ which thus find their way into the formularies of other institutions and into general practice.

“The object of this Pharmacopœia is to describe certain medicinal preparations and compounds which are frequently employed in St. Bartholomew's Hospital . . . the substances named in these preparations have been taken, with very few exceptions, from the

British Pharmacopœia . . . ; and the weights and measures employed are such as are authorised in that work.

The adoption of the English language in the British Pharmacopœia justifies the use of the same language in this Hospital Pharmacopœia; but the medicines themselves are designated, as they are also in the British Pharmacopœia, by a Latin . . . name, for the convenience of prescription."

These words taken from the preface to the Hospital pharmacopœia of 1877 might well serve as preface of the newest issue which has been closely revised and is now (1935) in the press. Quite a number of preparations included in the last issue have been discarded, some on the ground that they are now seldom prescribed, others on the ground that their medicinal value is not sufficiently great to justify their retention in a book which students regard as a text-book of prescribing. Previous issues have contained several examples of formulæ having very similar actions, e.g. the purgatives; in this issue the number has been reduced by selecting from each group those which appeared to be most valuable and most commonly prescribed. Many lotions and drops in common use are simple aqueous solutions of a single substance, and several of these have been omitted. It is considered preferable that the prescriber should state the strength of the solution he desires to be used rather than that he should indicate the degree to which a stock solution should be diluted.

The student, fresh to clinical work, from his studies in the chemical and physiological departments is accustomed to think in terms of metric units and percentage solutions; it is an effort, and a wholly unnecessary effort, for him to change to units of "grains per ounce." In the last issue of the Hospital pharmacopœia most of the formulæ for preparations for external uses were expressed as percentages; in the present issue this is so for all. In preparations for internal use the formulæ are those for a single dose, and

are stated both in metric and in Imperial units. It will be observed that in Imperial units only grains and ounces or minims and fluid ounces are used. Following the example of the B.P. the fluid drachm as a unit is now discarded. The  $\zeta$  and  $\bar{\zeta}$  are never used, they were abandoned by the Hospital Pharmacopœia in 1877. In this issue the metric units and doses precede the Imperial units (as they do also in the British Pharmacopœia), whereas in the last issue Imperial units come first. The change is not without significance and may be prophetic.

Comparison with previous issues of the Hospital pharmacopœia shows that the formulæ of even the best known old-established remedies do undergo slight changes. For the most part these are not matters of great moment; they may be due to changes in the British Pharmacopœia or represent alterations of pharmaceutical practice or convenience, or reductions in cost of production. A factor of great importance which no doubt has or will influence the pharmacopœias of many hospitals with medical schools is the issue of the "National Formulary for National Health Insurance Purposes" (N.F.). It is clearly undesirable that a hospital formulary should use a name which is included in the N.F. to describe a preparation differing greatly in composition or in dosage, however old-established the name may be in the hospital. It will be found that in this issue of the St. Bartholomew's pharmacopœia several changes have been made to effect this important unification, some of these will be mentioned below.

To trace the history and origin of various well-known formulæ is by no means easy. That they are in common use at the time is the general ground for inclusion in any issue. It is seldom easy to connect

a formula with the name of a prescriber. But since it will doubtless be of interest, references to old pharmacopœias will be made. The earliest of those consulted bears the date 1865 and is founded on the Pharmacopœia of the Royal College of Physicians of London; others which have been consulted bear dates 1877, 1888, 1896, 1900, and 1921 and are, of course, founded on the British Pharmacopœia.

With regard to *Baths*, the quantities of the medicament to be used for each gallon of water is stated. *Balnea* first appear in the issue of 1877. Various *Confections* included in previous issues have been omitted. The B.P. preparations are available, but are not very greatly used. The chief of the *Creams* is *cremor zinci* :—

R.	Zinc oxide	-	-	-	-	-	-	15
	Hydrous wool fat	-	-	-	-	-	-	5
	Olive oil	-	-	-	-	-	-	40
	Lime water	-	-	-	-	-	-	to 100.

In order to avoid a multiplication of formulæ, this cream is taken as a foundation and a note is added that common additions to this formula are one or more of the following :—

Salicylic acid	-	-	-	-	-	-	1
Precipitated sulphur	-	-	-	-	-	-	1
Solution of coal tar	-	-	-	-	-	-	12·5.

*Enemas* call for little comment. Formularies of different hospitals vary greatly in their composition. Turpentine enema is :—

R.	Oil of turpentine	-	-	-	-	240 minims
	Mucilage of starch (2 to 3 per cent)	-	-	-	-	to 2 fluid ounces.

Its volume is small, which is a considerable advantage when used for a patient much distended with gas in whom the introduction of half to one pint of fluid would not be very readily achieved.

The only *Gargle* calling for comment is “aspirin

gargle"—a one per cent. solution of calcium acetylsalicylate, or "soluble aspirin." It should be used as fresh as possible as it does not keep well. Not many *Guttæ* are included. For the most part, simple aqueous solutions are omitted. Phenol drops for the ear (4 per cent. in glycerin) are rather weaker than those of the N.F. (6 per cent. approximately) and are fully adequate. It will be noted also that the strength is stated clearly as a percentage of phenol which is better than directing that the B.P. glycerin of phenol be diluted. Similarly, peroxide ear drops are described as a solution of hydrogen peroxide, "5 volumes," not as equal parts of the B.P. solution and water.

*Haustuli* or mixtures for children are made up to 60 minims and contain doses which may be considered suitable for a child of one year. The title first appears in the copy of the Pharmacopœia dated 1896, the formulæ were then for children aged about two. In the earlier issues there are not any separate formulæ for children. There are few changes from the last issue.

A tolu mixture:—

R	Syrup of tolu	-	-	-	-	-	10 minims
	Oxymel of squill	-	-	-	-	-	5 minims
	Syrup	-	-	-	-	-	10 minims
	Water	-	-	-	-	-	to 60 minims.

has been added, and the castor oil mixture now contains only  $2\frac{1}{2}$  minims instead of 5.

*Haustus*.—The stock mixtures for adults still retain the name of *Haustus*, though the dose in each case is now reduced to half a fluid ounce. Originally the title was well merited, for in the Pharmacopœia of 1865 the dose was one and a half fluid ounces, but in 1877 the dose was reduced to one fluid ounce, with very few exceptions; in 1888 all were reduced and the dose has remained unchanged until the present time. It is of interest to note that N.F. retains four examples

of haustus; in each case the dose is one and a half fluid ounces, and single doses only are dispensed unless otherwise directed.

Although dilute nitrohydrochloric acid has been omitted from the British Pharmacopœia the *Haustus acidi nitrohydrochlorici* is retained in the Hospital formulary:

R Dilute nitrohydrochloric acid (B.P. 1914)	10 minims
Spirit of chloroform - - - -	10 minims
Fresh infusion of orange peel to - -	$\frac{1}{2}$ fluid ounce.

It has several advantages; the dilute nitrohydrochloric acid is equivalent in strength to B.P. dilute hydrochloric acid but is more palatable. Some patients find it difficult to take a simple hydrochloric acid mixture in equivalent dosage and must dilute it with water. In the strength prescribed the mixture is about equal in acid value to gastric juice. In cases of achlorhydria the dose may be increased to two ounces or more. The formula is one of the oldest in the Hospital pharmacopœia; originally (1877) it contained 20 minims of tincture of orange peel, but this was replaced by infusion in 1900.

*Haustus albus* contained 10 grains of magnesium carbonate in 1888; this was increased later to 15 gr., now it reverts to 10 grains and is identical with the N.F. mixture. *Haustus calumbæ alkalinus* is an excellent simple bitter:—

R Sodium bicarbonate - - -	10 grains
Tincture of calumba - - -	20 minims
Spirit of chloroform - - -	5 minims
Fresh infusion of orange peel -	$\frac{1}{2}$ fluid ounce.

It is much used when the purgative action of *Hst. gent. c. rheo* is not required. Except for the addition of the spirit of chloroform as a preservative the formula is the same as that of 1888. The 1877 formula contained tincture of orange peel and infusion of calumba, that of 1896 contained both tinctures. The

present formula has been unchanged since 1900. *Haustus colchici* differs from the N.F. mixture; it is as follows :—

R	Tincture of colchicum	-	-	-	10 minims
	Magnesium carbonate	-	-	-	10 grains
	Peppermint water	-	-	-	to $\frac{1}{2}$ fluid ounce.

It is a very satisfactory formula. Except in the dosage of tincture, formerly 20 minims, and the total volume of fluid, the formula is that of the *Hst. colchici* co. of 1861. The colchicine content must have varied, for the strength of B.P. tincture of colchicine has been altered from time to time, now the colchicine content is standardized. The *Haustus* contains one-third of the amount of colchicine contained in the N.F. mixture.

There are three mixtures containing iron; of these *Hst. ferri et ammon. cit.* calls for no comment. *Hst. ferri cum quassia* (15 minims of liquor ferri perchlor. in fresh infusion of quassia) is a satisfactory bitter iron tonic, but still more beloved by patients is *Hst. ferri cum nucẽ vomica* :—

R	Solution of ferric chloride	-	-	10 minims
	Tincture of nux vomica	-	-	5 minims
	Dilute phosphoric acid	-	-	5 minims
	Chloroform water	-	-	to $\frac{1}{2}$ fluid ounce.

The three formulæ have not changed greatly since their introduction in 1888. *Haustus gentianæ cum rheo alkalinus* is perhaps the most frequently prescribed of all the mixtures. The formula in use since 1900 is :—

R	Sodium bicarbonate	-	-	10 grains
	Oil of peppermint	-	-	$\frac{1}{2}$ minim
	Spirit of chloroform	-	-	3 minims
	Fresh infusion of rhubarb 5%	-	-	120 minims
	Fresh compound infusion of gentian	-	-	to $\frac{1}{2}$ fluid ounce.

The special excellence and palatability of this preparation are due to the use of fresh infusions, and many gallons are prepared daily. It is a favourite



vehicle for the administration of potassium bromide.

*Haustus hydrargyri perchloridi* and *Hst. hydrarg. perchloridi cum pot. iod.* differ from the N.F. formulæ in two respects; caramel is used as flavouring agent, and the mercuric chloride is prescribed in a dose of  $\frac{1}{16}$  grain instead of 60 minims of the liquor hydrarg. perchlor. The favourite method of prescribing magnesium sulphate is as *Haustus magnesi sulphatis*, the formula of which is :—

R	Magnesium sulphate	-	-	-	60 grains
	Dilute sulphuric acid	-	-	-	10 minims
	"Red liquid"	-	-	-	2 minims
	Peppermint water	-	-	-	to $\frac{1}{2}$ fluid ounce.

This is but the shadow of the former *Haustus menthæ sulphuricus cum magnesi sulphate* of the Pharmacopœia of 1865. In that year the colouring matter was syrup of red poppy, and spearmint water provided the flavour. In 1896 peppermint replaced the spearmint and now, with the disappearance of syrup of red poppy from the B.P., a synthetic dye supplies the colour.

*Haustus quininx cum potassii iodido* has been slightly altered; the present formula is :—

R	Quinine hydrochloride	-	-	-	1 grain
	Potassium iodide	-	-	-	5 grains
	Water	-	-	-	to $\frac{1}{2}$ fluid ounce.

Formerly quinine sulphate was used dissolved with the aid of dilute sulphuric acid. The mode of action of the mixture is not very clear; it does seem to benefit greatly many elderly patients suffering from osteoarthritis. It may be that the small dose of quinine acts as a bitter in improving appetite and the iodide may supply a deficiency. In 1877 the mixture contained two grains of quinine sulphate; this was reduced to one grain in 1888, since when the formula remained

unchanged until the present revision.

*Haustus sodii salicylatis et quininæ* is very popular as a remedy for influenza :—

R. Sodium salicylate -	-	-	-	10 grains
Quinine sulphate -	-	-	-	1 grain
Compound tragacanth powder -	-	-	-	5 grains
Chloroform water -	-	-	-	to $\frac{1}{2}$ fluid ounce.

It keeps well as a concentrated stock to be diluted four times before issue.

*Haustus sennæ compositus* differs materially from the B.P. *Mist. sennæ co.* Its formula is :—

R. Magnesium sulphate -	-	-	-	$\frac{1}{4}$ ounce
Spirit of peppermint -	-	-	-	10 minims
Liquid extract of liquorice -	-	-	-	60 minims
Infusion of senna (B.P. 1914) -	-	-	-	to $\frac{1}{2}$ fluid ounce.

It is of very similar strength, but differs in flavouring, and it is made from the leaves, not the pods, of senna. It is quite a palatable preparation and less expensive than the B.P. The extract of liquorice was introduced into the formula in 1896; prior to 1888 a quarter of a minim of oil of peppermint replaced the spirit. In that form the prescription appears in the *Pharmacopœias* of 1877 and 1865.

*Linctus scillæ opiatus*, “Gee’s linctus,” which consists of equal parts of camphorated tincture of opium, oxymel of squill, and syrup of tolu, is one of the few formulæ definitely associated with the name of a prescriber. It first appeared in the *Pharmacopœia* of 1888 as *Linctus camphoræ compositus*, a name by which it is still widely known elsewhere, but there was risk of confusion, when written in abbreviated form, with liniment of camphor. Hence in the 1896 issue the present more descriptive title was adopted. The great popularity and efficacy of this linctus have caused it gradually to supplant the simple linctus (con-

taining syrup of poppy capsules, vinegar of squill, and confection of rose) which now finally disappears from the Hospital Pharmacopœia, where it had done duty unaltered since 1877, and in slightly different form from 1865 or much earlier.

*Liniments.*—The liniments which are retained in this issue are very few, and it is interesting to note that two of these formulæ are very old. Linimentum cantharidini cum ammonia is now :—

R	Tincture of cantharidine (B.P. 1914)	-	-	16
	Strong solution of ammonia	-	-	32
	Spirit of rosemary	-	-	4
	Glycerin	-	-	32
	Almond oil	-	-	75
	Distilled water	-	-	to 100.

It is a modified form of a prescription dating back to the issue of 1888 and very popular as a scalp lotion. Linimentum saponis cum ammonia is much used as a simple liniment :—

R	Soft soap	-	-	-	12·5
	Industrial methylated spirit	-	-	-	9
	Oil of turpentine	-	-	-	4·5
	Dilute solution of ammonia	-	-	-	3
	Distilled water	-	-	-	to 100.

It is cheaper and rather more stimulating than the B.P. soap liniment. Except that methylated spirit replaces rectified spirit, and a very small quantity of oil of marjoram or of organum formerly present is now omitted, the formula is almost identical with that in use in 1865.

*Lotions.*—These are more subject to change than mixtures and the formulæ cover the field of most of the special departments. The number has been cut down by omitting many which are simple aqueous solutions of a single substance. The Lotio calaminæ composita has been adjusted to correspond with the N.F.,

and in order to simplify formulæ it is used also as a vehicle and a note is added that common additions are one or more of the following :—

Dilute solution of lead acetate	-	-	-	12.5
Solution of coal tar	-	-	-	12.5
Precipitated sulphur	-	-	-	2

*Nebulæ*.—Two may be mentioned, *Nebula ephedrinæ composita* :—

R	Ephedrine	-	-	-	-	-	0.5
	Menthol	-	-	-	-	-	0.5
	Oil of eucalyptus	-	-	-	-	-	0.5
	Liquid paraffin	-	-	-	-	-	to 100.

and *Nebula menthol.* :—

R	Menthol	-	-	-	-	-	1
	Oil of eucalyptus	-	-	-	-	-	1
	Liquid paraffin	-	-	-	-	-	to 100.

As regards eye ointments or *oculenta*, the *Oculentum atropinæ et cocainæ* is :—

R	Oculenti atropinæ (0.25%)	-	-	} Equal parts.
	Oculenti cocainæ (0.25%)	-	-	

*Pastes*.—There are three convenient formulæ for skin pastes constructed on similar lines :—

Pasta Picis Carbonis	Fortis and Mitis
Prepared coal tar	12.5 and 6.25
Zinc oxide	12.5 and 18.75
Starch	37.5
Soft paraffin	37.5

The formula of *Pasta zinci oxidi cum adipe lanæ* is as follows :—

R	Zinc oxide	-	-	-	-	25
	Starch	-	-	-	-	25
	Hydrous wool fat	-	-	-	-	25
	Soft paraffin	-	-	-	-	25

A note is added that calamine is sometimes substituted for zinc oxide.

*Powders*.—Powders for internal use have disappeared almost completely from the pharmacopœia; tablets

which can easily be crushed are much simpler to prepare. The powder of bismuth carbonate, sodium bicarbonate, heavy magnesium carbonate, and chalk is made up in the proportions: 1, 4, 4, 4, and differs slightly from the N.F. Pulv. bismuth. co. It is also rather less expensive. The potency of these alkaline powders is not generally realized; a note is added that 4 grammes or 60 grains (roughly a level teaspoonful) neutralize approximately 630 millilitres (over a pint) of decinormal hydrochloric acid. Compound stramonium powder (asthma powder) to be burned has quite gone out of use and has been discarded.

*Tablets.*—The number of tablets stocked is fairly large; pills have not been made for many years, and all the pill formulæ and nearly all the preparations usually issued as powders are now made into tablets and are described as such. The only tablet containing aloes (except in association with colocynth) is Tab. aloes et nucis vomicæ which contains 4 grains of aloes and  $\frac{1}{4}$  grain of extract of nux vomica; it is almost the same as that of 1877, and differs from the N.F. pill. It is no less commonly prescribed than formerly and is not being supplanted by the simple tablet of cascara ( $2\frac{1}{2}$  grains of dry extract) or tablet of cascara and nux vomica.

The Pharmacopœia of 1877 contained a pill of creosote containing one minim in crumb of bread. Later powdered liquorice 1 grain and a sufficiency of hard soap were used to absorb and bind. In this formula it is now used as a tablet. It is a formula not generally known, but is a very valuable and powerful carminative. There was formerly also a pill containing creosote, asafetida and rhubarb, and later creosote and galbanum. Both these were helpful in intestinal flatulence, but when Pil. galbani co. was discarded

from the B.P. in 1914 the preparation was omitted.

There is always a tendency for mercurial preparations to multiply, and for one prescriber to use calomel as an ingredient when another uses mercury pill or grey powder. Which of the tablets are to be retained in the Pharmacopœia has not yet been finally decided, but the following selection is probable:—Tab. calomel., colocynti et hyoscyami and tab. hydrargyri c. rheo, both of which date from 1888, and are identical with N.F. pills. Tab. calomel and jalap (1 grain and 3 grains) and Tab. calomel and rhubarb (1 grain and 4 grains), both dating from 1865, may also be retained. Tablets containing grey powder and rhubarb, and grey powder, rhubarb and sodium bicarbonate are also probable for children's use. If "Hutchinson's pills" (equal parts of grey powder and Dover's powder) are retained the dose will be reduced to 1 grain of each in order to conform with N.F. From 1865 until the present time the dose has been  $2\frac{1}{2}$  grains of each.

The Pharmacopœia concludes with some suggestions for first-aid treatment of cases of poisoning, tables of doses, of the more important preparations of the B.P. for external use, and scales of diet in use in the hospital. Comparing the text with that of several previous issues it is interesting to observe gradual changes, the introduction of formulæ some of which find favour and supplant older preparations, others of which prove less acceptable and are discarded.

Many of the newer remedies are not included in any formula in this pharmacopœia. It is not always politic to introduce a formula into such a book until considerable experience of its efficacy and keeping qualities has been obtained, although in fact the drug is available in the dispensary in a stock form. It is undesirable to stereotype a

prescription prematurely. A certain number of substances in regular use are also not included on grounds of cost. For example, no formula containing *Liquor ergosterolis irradiati* is included. Were it included, it is at least likely that it would often be prescribed when cod-liver oil would be quite as suitable, and the cost would be much higher. A function of a hospital pharmacopœia is to simplify the work of the dispensary and to economize in drugs and effort. To the student and young practitioner it also serves as a guide and sometimes as an inspiration. It should be at the same time simple and free from redundancies but sufficiently comprehensive. To achieve these ends has been the aim of the present revision of the Pharmacopœia of St. Bartholomew's Hospital.

## II

# THE PHARMACOPŒIA OF GUY'S HOSPITAL

By N. MUTCH, M.D., F.R.C.P.

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**F**EW of the special preparations still in use at Guy's Hospital are of any great antiquity. The foundation was not established until the eighteenth century. The formulary of 1787, the product more particularly of the sister hospital, St. Thomas's, contains certain relics of an earlier belief in obscene animal remedies, but such items as the expressed juice of millipedes and liniment of vipers were excluded from the Guy's edition published four years later. A number of the old formulæ found their way into the British Pharmacopœia but apart from these an occasional one has survived as a local tradition. A mixture containing balsam of Peru is a case in point. The details as given in 1787 have not been modified greatly beyond the substitution of honey for the original marshmallow and its designation as a "mixture" instead of by the more picturesque title of "potion." The present formula is :—

R	Balsam of Peru	-	-	-	-	-	15 minims
	Purified honey	-	-	-	-	-	90 grains
	Water	-	-	-	-	-	to 1 fluid ounce.

It is an unpalatable preparation which is not likely to survive much longer.

A more popular survival is Mist. ammoniæ, the direct descendant of the eighteenth century julep of the same name. It is a drinkable concoction of



ammonium carbonate and carminatives :—

R Ammonium carbonate	-	-	-	4 grains
Purified honey	-	-	-	20 minims
Compound tincture of lavender	-	-	-	20 minims
Peppermint water	-	-	-	to 1 fluid ounce.

Stock bottles still stand in the casualty surgery and also in the out-patient rooms and operating theatres. It is a reflex vasomotor stimulant used in cases of fainting from injury or emotion, in which emergencies it is very effective. Made more palatable with lemon syrup and soda water it is, when needed, the standard restorative for dressers and assistants between operating sessions.

The turpentine enema so useful for the release of loculated gas in the bowel is a constant feature. Its origins reach back far beyond those of the hospital itself. It appeared in the earliest editions of the Guy's Pharmacopœia and was incorporated at a later date in the British Pharmacopœia only to be again discarded, but at Guy's it is still in common employment :—

R One fluid ounce of rectified oil of turpentine	in one pint of mucilage containing half an ounce of starch.
--	---

Another eighteenth century survival is a potent blend of colocynth and calomel. Its invention is often attributed to Sir Astley Cooper, and this tradition may possibly be correct. Although not elected to the staff as surgeon until 1800, Astley Paston Cooper became a demonstrator in 1789 and lecturer in 1791. The formula appeared in the 1791 edition of the Pharmacopœia. The modernized version, which is a close copy of the original, reads :—

R Compound pill of colocynth	-	-	-	3 grains
Mercurous chloride	-	-	-	1 grain.

#### RECENT DEVELOPMENTS

Popularity, however, cannot be judged by survival time alone. Many of the remedies commonly used

to-day are of relatively recent invention. Probably the two greatest therapeutic principles applied during the present century to the treatment of alimentary disorders are those of lubrication and adsorption. The application of both has evolved steadily at Guy's. Liquid paraffin is the lubricant in widest use in Great Britain. The progressive increase in its consumption at Guy's under the influence of Sir Arbuthnot Lane's teaching can be demonstrated impressively by a graph (Fig. 1). During the last war supplies were expensive and almost unprocurable. An emulsion of soft white paraffin was used as a substitute and a corresponding fall can be noticed in the graph. The curve swept upwards long after the originator of paraffin therapy had retired from the active staff. The small decrease in consumption during the last two years coincides

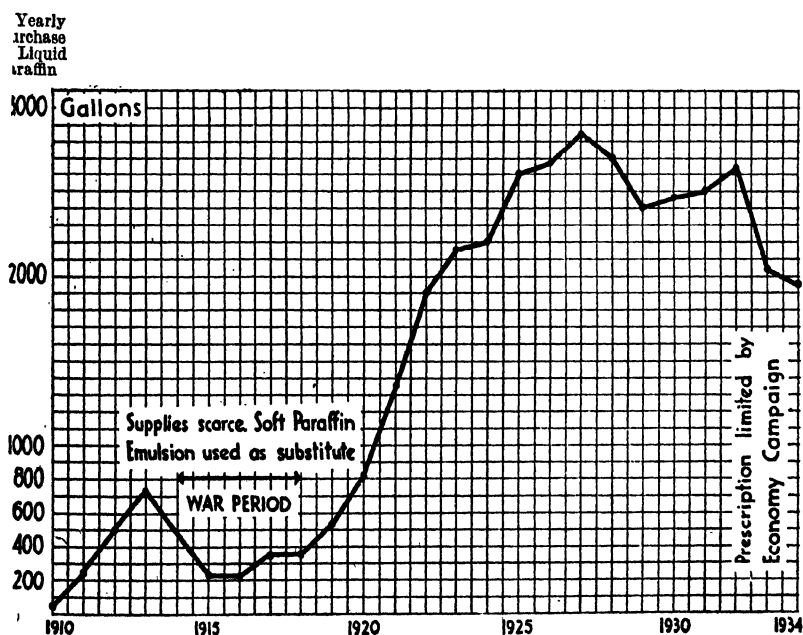


FIG. 1.—Consumption of medicinal liquid paraffin at Guy's Hospital.

with deliberate propaganda against its prescription in the interests of hospital economy. It is nevertheless still used in greater bulk than any other substance or preparation. It overshadows even the most popular mixtures used in the symptomatic treatment of indigestion, coughs, rheumatism and colds. Eight tons were used last year and a total of 36,463 gallons since 1910, when it first became a significant item on the dispensary list. In spite of the most careful buying the cost has been almost £10,000.

Kaolin is the substance most extensively employed as an adsorbent in the alimentary tract. Its application for this purpose is almost limited to the post-war era and dates from the fundamental work of R. R. Walker in the department of bacteriology at Guy's at the close of the war on the detoxicating effect of kaolin on cultures of the cholera vibrio. It is not yet prescribed so extensively as liquid paraffin, but during 1934 the hospital purchased more than 2 cwt. in addition to any utilized in the preparation of Cataplasma kaolini.

Other instances of the perpetuation of clinical teaching in terms of practical therapy are difficult to discern in the pharmacopœia. Even the researches of a succession of early physicians on red Peruvian bark do not find any reflection there. Probably they have been overshadowed by the isolation of quinine and the eradication of malaria from Essex and Kent. No therapeutic legacies for Bright's disease or Addison's disease are mentioned. These illustrious predecessors appear to have concerned themselves more with the healing craft and with morbid anatomy in its relation to the clinical syndrome than with the science of therapeutics.

#### PRESENT-DAY FAVOURITES

Most of the present-day stock mixtures were devised

in the time of Pavy, Moxon and Wilks and appear in the 1879 pharmacopœia. The two prime favourites are Mist. acidi co. and Mist. oxymellis co. : 1,408 gallons of the former were dispensed last year. Its formula is:—

R Liquid extract of nux vomica	-	-	1 minim
Dilute nitrohydrochloric acid	-	-	10 minims
Compound infusion of gentian	-	-	to 1 fluid ounce

The reason for the selection of nitrohydrochloric instead of simple hydrochloric acid is not apparent. Given before meals the bitterness of the gentian induces a reflex secretion of gastric juice and the acidity is designed to relax the pylorus and excite a flow of pancreatic juice. It improves appetite and digestion in the common varieties of depressed function. The amount of acid used is insufficient to affect the later reaction of the gastric contents after the meal has been taken. The amount of acid which would be required for this purpose would expose the mucosa of the pharynx and œsophagus to the risks of chemical trauma and affect the acid-alkali balance mechanism. Such strong acid solutions are employed but have not proved to be so generally useful as the traditional weak preparation described. The mixture contains sufficient strychnine to activate the spinal reflexes and produce a lasting feeling of well being. It is often prescribed as a "tonic."

Mist. oxymellis co. has undergone slight changes in the relative proportions of its constituents. In its final form it is the most sought after out-patient palliative for bronchial troubles :—

R Potassium nitrate	-	-	-	10 grains
Liquid extract of ipecacuanha	-	-	-	1 minim
Camphorated tincture of opium	-	-	-	30 minims
Oxymel	-	-	-	120 minims
Water	-	-	-	to 1 fluid ounce

Irritation in the pharynx and fauces is eased by the oxymel and potassium nitrate, an easy reflex flow of

mucus is induced by the ipecacuanha, while the camphorated tincture of opium acts as a sedative to the cough centre and restrains the reflex within the limits of useful expectorant action. The annual consumption far exceeds that of any other mixture of kindred nature.

Another mid-Victorian formula of sustained interest is Pil. hydrargyri diuretica, a combination of mercury, digitalis, squill and hyoscyamus often alluded to as Guy's pill :—

R. Mercury pill	-	-	-	-	-	1 grain
Squill in powder	-	-	-	-	-	1 grain
Digitalis leaf in powder	-	-	-	-	-	1 grain
Extract of hyoscyamus	-	-	-	-	-	1 grain

It resembles the pill of the same name (Guy's pill) given in the British Pharmaceutical Codex, but the latter does not contain hyoscyamus. The original Guy's prescription ordered  $1\frac{2}{3}$  grains of extract of hyoscyamus for each pill, and the formula in use to-day provides for 1 grain. It is difficult to understand why such an active ingredient has been omitted from the version recorded in the Codex. The pill is of great value in ridding the patient of persistent œdema, especially in cardiac conditions. The suitability of digitalis for this purpose is obvious but historic interest centres on the mercury. The combination is undoubtedly more efficacious than simple digitalis used alone and the additional diuretic effect is probably determined by the mercury. The pill must be regarded as the forerunner of the powerful organic mercurial diuretics of recent years. Mercurial diuresis was recorded in the eighteenth century, but the knowledge was soon lost and practically rediscovered in 1886. The inclusion of a mercurial "diuretic pill" in the 1879 edition of the Guy's pharmacopœia is therefore

not without interest.

Unguentum metallorum is an ointment of the same date which Sir Cooper Perry tells me he found in the widest possible use when he joined the staff in 1887:—

R Lead subacetate ointment  
Dilute mercuric nitrate ointment  
Zinc ointment,      of each, equal parts.

It combines the antiseptic action of mercury with the double sedative astringent actions of zinc and lead.

#### USEFUL PRESCRIPTIONS

The preparations in most general use to-day are those of the British Pharmacopœia and the Codex, with a varying selection of proprietary remedies. If these are excluded there still remain a number of relatively modern local formulæ for application in common conditions. Some of these will now be quoted:—

Compound papaverine tablets:—

R Papaverine hydrochloride	-	-	$\frac{1}{2}$ grain
Hyoscyamine sulphate	-	-	1/300 grain
Benzyl succinate	-	-	4 grains.

This is employed to allay colonic spasm and much used in the treatment of spastic constipation. The papaverine and benzyl succinate cause a certain amount of muscular relaxation by direct action in addition to any secured through depression of the vagus endings by the hyoscyamine. The tablet also diminishes the leakage tendency of liquid paraffin when, as is so often the case, the leak is consequent upon separation of the oil from the fæces during percolation through some narrow zone of colonic spasm. Codeine and belladonna pill of the Guy's Hospital Pharmacopœia is sometimes used for similar purposes.

Codeine linctus:—

### III

## THE PHARMACOPŒIA OF ST. THOMAS'S HOSPITAL

By V. J. WOOLLEY, M.D.

*Lecturer in Pharmacology, St. Thomas's Hospital.*

AS in the case of the other great London hospitals, at St. Thomas's the earliest form of the Hospital Pharmacopœia seems to have been a manuscript copy of the most commonly used prescriptions, which would most probably be kept in what was called the apothecary's shop for the use of the apothecary. This manuscript, so far as can be discovered, no longer exists, and the earliest available copy of what was called the "Dispensatory" forms part of an octavo volume of some 350 pages by a distinguished physician named Robert Poole. He named his book *A Physical Vade Mecum, or Fifth Gift of Theophilus Philanthropos*, and it contains, besides the dispensatory of St. Thomas's Hospital, "a catalogue of the diseases and the method of their cure prescribed in the said Hospital" as well as the dispensaries of St. Bartholomew's and of Guy's.

Poole's previous four books or, as he called them, Gifts, were mainly theological and he seems to have turned his attention to medicine when he was rather older than most students. His book appeared in 1741 and provides an unusually detailed account of the hospital administration of the time and of the relations and responsibilities of the professional staff and the governors. The Hospital Pharmacopœia, as he gives it, contains an immense number of prescriptions and it is difficult to believe that all those he

quotes were in common use, but he distinguished by special marks some which he has derived from the old manuscript dispensatory and others which he says "are taken from a printed copy of the Hospital, bearing date An. Dom. 1718." Neither of these sources now exist, so far as can be discovered, but the printed one is possibly the same as that in the collection of hospital dispensaries printed in 1718 under the title of *Pharmacopœia Pauperum*. Of all the preparations which Poole describes there are hardly any which are in use to-day. His outlook is that of the herbalist and his materials do not seem even to include Epsom salts, while he gives recipes for an infusion of millepedes, and for Aqua limacum of which snails and earthworms form the chief ingredients.

#### EARLY EDITIONS

In 1787 the Hospital Pharmacopœia was published in its present size. It bears no author's name but is clearly an official compendium and the copy in St. Thomas's library is bound up with the pharmacopœia of the Royal College of Physicians dated 1788 and was intended to be supplementary to the *Norma Pharmacopœia Londinensis*, since the preparations given in this work are only named and not described in full.

Although the first pharmacopœia was printed only forty-six years after the *Physical Vade Mecum*, the contrast between the two is great and shows how much the medical outlook had altered during that time. It contains among other prescriptions one for a Pulvis sudorificus, which consists of equal parts of ipecacuanha root and opium, and also may be quoted the formula for Haustus solutivus, which is the earliest mention of what is essentially the Haustus sennæ



compositus of 1935:—

✓ R. Salis cathartici amari drachmas sex,  
 Aquae fontanae uncias tres,  
 Tincturae senae drachmas sex,  
 Fiat haustus quarto quoque mane sumendus.

The next edition I can find is dated 1800 and is bound up with the same 1788 College Pharmacopœia. The preparations are not very different from those of the previous issue, but now they are all given titles referring to their composition and not to their use. Thus the *Pilulæ aperientes* of 1787 have become the *Pilula colocynthis composita* of 1800 and similar changes have been made in each case. The edition of 1818 does not differ greatly from its predecessor, but in it there appears, for the first time, the prescription

✓ R. Extracti colocynthis co.     -     -     - gr. xlviij.  
 Hydrargyri submuriatis     -     -     - gr. xii.  
 Syrupi simplicis quod satis est  
 Contunde, et divide in pilulas xii.

a formula which is still present in the 1935 edition though now expressed as the recipe for one tablet.

After 1818 there is a long gap until 1855. This gap covers the whole period of service to the hospital of Dr. Robert Williams, a member of the Staff from 1816 to 1845 who is noted for his discoveries of the specific actions of the bromide and iodide of potassium. In this edition there is to be found for the first time a *Mistura potassii iodidi*, three grains to the ounce, but no mention is made of the bromide. There is mention also of various salts of morphine and sulphate of quinine, though no other alkaloids seem to have been known.

It would be wearisome to trace the various changes that the *Pharmacopœia* has gone through during the

last hundred years. They have been the same as those in medicine itself, and it is proposed now to deal in more detail with the 1935 issue.

## PRESENT EDITION

Among poultices it seems worth while to note the kaolin poultice which tends nowadays to replace the older linseed or mustard. The formula given is as follows :—

	Parts.
R Kaolin, in very fine powder - - -	574
Boric acid, in very fine powder - - -	25
Menthol - - - - -	0·25
Methyl salicylate - - - - -	0·5
Oil of peppermint - - - - -	0·25
Glycerin - - - - -	400

The enemas do not call for special comment. The old *Enema nutriens* has disappeared and its place is taken by an *Enema glucosi* consisting of half an ounce of glucose in ten ounces of water.

*Lotions.*—One of the most recent additions to the *Pharmacopœia* has been brought about by the development of the tannic acid treatment of burns. There are two difficulties involved in the storage of a solution of tannic acid. It quickly becomes mouldy, and, if this is overcome, it slowly becomes hydrolysed and inert. To overcome the first difficulty the following formula is used for *Lotio acidi tannici* :—

R Tannic acid - - - - -	175 grains
Mercuric chloride - - - - -	4½ grains
Distilled water - - - - -	to 1 pint.

This solution will not become mouldy, but the tannic acid will become slowly hydrolysed and useless in about two months. For those therefore who only need the solution at long intervals it is recommended

to make a powder to the formula

R	Tannic acid	-	-	-	-	-	17½ grains
	Mercuric chloride	-	-	-	-	-	$\frac{7}{16}$ grain

which will keep indefinitely. This when dissolved in 2 ounces of water makes a lotion containing 2 per cent. of tannic acid which is the standard strength used.

#### MIXTURES

The *Haustus sennæ compositus* now in use has the formula

R	Magnesium sulphate	-	-	-	-	240 grains
	Liquid extract of liquorice	-	-	-	-	30 minims
	Infusion of senna	-	-	-	-	to 1 ounce

As mentioned on page 35, it is the oldest prescription in the *Pharmacopœia* and in essentials dates from 1787. Other somewhat less drastic aperient mixtures include the familiar *Mistura alba*, *Mistura cascariæ sagradæ* which has the formula

R	Liquid extract of cascara sagrada	-	-	-	-	30 minims
	Liquid extract of liquorice	-	-	-	-	30 minims
	Aromatic spirit of ammonia	-	-	-	-	20 minims
	Chloroform water	-	-	-	-	to 1 ounce

and *Mistura salina laxans*

R	Magnesium sulphate	-	-	-	-	30 grains
	Potassium citrate	-	-	-	-	20 grains
	Tincture of hyoscyamus	-	-	-	-	15 minims
	Chloroform water	-	-	-	-	to 1 ounce

The purchase of proprietary remedies is always a financial strain on a hospital, and it is necessary to imitate these on the premises in all possible instances. The last edition of the *Pharmacopœia* contains a suspension in water of very finely divided magnesium hydroxide, under the name of *Mistura magnesiæ* and also a *Mistura magnesiæ et paraffini* which con-

sists of the same suspension in which is also suspended  $33\frac{1}{2}$  per cent. of liquid paraffin.

After purgative mixtures, the greatest demand is perhaps for mixtures for gastric ailments, and there are various bismuth mixtures of which the *Mistura bismuthi cum soda* is perhaps the best known. It contains 15 grains each of bismuth carbonate and sodium bicarbonate in an ounce of peppermint water. In the earlier editions of the *Pharmacopœia* some glycerin or gum was also present but this is now thought unnecessary.

All the mixtures which need the addition of chloroform to preserve them from mould are now made with the emulsion of chloroform instead of the more expensive tincture in those cases in which chloroform water cannot be used. The formula for this emulsion is:—

R	Chloroform	-	-	-	-	-	1 ounce
	Tincture of senega	-	-	-	-	-	60 minims
	Water	-	-	-	-	-	to 1 pint
	Mix and shake.						

In order to neutralize the stomach contents for the treatment of ulcers, various mixtures of alkalis have been used in the last few years. It is well known that the carbonates of bismuth, magnesium and sodium formed the original prescription. The present standard powder for this purpose is well known and in the *St. Thomas's Pharmacopœia* is named *Pulvis bismuthi compositus*:—

R	Bismuth carbonate	-	-	-	-	1 part
	Heavy magnesium carbonate	-	-	-	-	4 parts
	Sodium bicarbonate	-	-	-	-	4 parts
	Chalk	-	-	-	-	4 parts

It is less well known that it is possible to do without the expensive bismuth carbonate altogether, and to

effect this there is a substitute powder called *Pulvis cretæ alkalinus* composed of:—

R	Heavy magnesium carbonate	-	-	-	8 parts
	Sodium bicarbonate	-	-	-	3 parts
	Chalk	-	-	-	12 parts

This powder seems as effective as the standard one and is more economical in view of the quantities required. Either can be modified to suit individual patients by changing the proportions of magnesium or calcium according to the need for an aperient or for the opposite. There are provided, of course, several other mixtures containing bismuth, the first one appearing in the *Pharmacopœia* of 1867, where it was given with calumba; but the present mixtures are simple suspensions of bismuth carbonate in peppermint water either alone or with light magnesium carbonate or sodium bicarbonate according to what is needed. Besides these mixtures there are also tablets of bismuth and soda and the more familiar “soda mint” containing  $\frac{1}{8}$  grain of ammonium carbonate in addition to the soda and oil of peppermint.

After remedies for indigestion, perhaps the most important group is that of the expectorant mixtures, and of these the oldest (1867), *Mistura cascarillæ composita* is still widely used.

R	Camphorated tincture of opium	-	-	15 minims
	Vinegar of squill	-	-	20 minims
	Emulsion of chloroform	-	-	10 minims
	Infusion of cascarilla (B.P.C.)	-	-	to 1 ounce

For children *Mistura expectorans* is valuable:—

R	Dilute solution of ammonium acetate	-	120 minims
	Vinegar of squill	-	15 minims
	Tincture of ipecacuanha	-	15 minims
	Glycerin	-	40 minims
	Chloroform water	-	to 1 ounce

Dose for infants, 60 to 120 minims.

For adults with a dry cough, the *Mistura ammoniæ cum senega* is often used :—

R	Ammonium carbonate	-	-	-	4 grains
	Tincture of ipecacuanha	-	-	-	10 minims
	Infusion of senega	-	-	-	$\frac{1}{2}$ ounce
	Chloroform water	-	-	-	to 1 ounce

A reflex expectorant is combined with iodide in the *Mistura potassii iodidi alkalina* :—

R	Potassium iodide	-	-	-	3 grains
	Potassium bicarbonate	-	-	-	10 grains
	Ammonium carbonate	-	-	-	3 grains
	Chloroform water	-	-	-	to 1 ounce

Besides the well-known Gee's linctus, there is also a *Linctus codeinæ* :—

R	Syrup of codeine phosphate (B.P.C.)	-	-	-	30 minims
	Citric acid	-	-	-	1 grain
	Glycerin	-	-	-	10 minims
	Emulsion of chloroform	-	-	-	3 minims
	Mucilage of tragacanth	-	-	-	to 60 minims

Among the mixtures prescribed for their action on the central nervous system, the *Mistura strychninæ acida* has been slightly modified in the last issue and now is as follows :—

R	Solution of strychnine hydrochloride	-	-	-	2 minims
	Dilute hydrochloric acid	-	-	-	10 minims
	Syrup	-	-	-	30 minims
	Compound infusion of gentian	-	-	-	$\frac{1}{2}$ ounce
	Chloroform water	-	-	-	to 1 ounce

A valuable hypnotic is the *Mistura chloralis composita* :—

R	Chloral hydrate	-	-	-	20 grains
	Potassium bromide	-	-	-	20 grains
	Liquid extract of liquorice	-	-	-	30 minims
	Chloroform water	-	-	-	to 1 ounce

and as a nervous sedative there is provided a *Mistura phenobarbitoni composita* :—

R	Phenobarbitone (soluble)	-	-	-	$\frac{1}{2}$ grain
	Potassium bromide	-	-	-	10 grains
	Chloroform water	-	-	-	to 1 ounce

But as this mixture is unstable, only comparatively small quantities can be dispensed at one time.

Among recent additions to the Pharmacopœia are certain solutions for injection. These include a solution of phenol and glycerin for the treatment of hæmorrhoids :—

R	Phenol	-	-	-	-	-	48 grains
	Glycerin	-	-	-	-	-	120 minims
	Distilled water	-	-	-	-	-	to $\frac{1}{2}$ ounce.

Dose 2-5 minims (paravenously).

The following is used for varicose veins :—

R	Quinine hydrochloride	-	-	-	-	5 per cent.
	Urethane	-	-	-	-	2 $\frac{1}{2}$ „
	in distilled water.					

*Powders.*—All the powders which are not too bulky are now dispensed as tablets which may be crushed up by the patient if necessary, and the tablet form has also replaced the old pills, several of which have already been mentioned.

#### FORMULÆ FOR SPECIAL DEPARTMENTS

The present Pharmacopœia contains special sections devoted to the preparations used in the Skin, Eye, and Ear, Nose, and Throat Departments.

Among the preparations used in the *Eye Department* the ointments or “Oculenta” are the only ones which call for any special mention. They are all made up with a basis of :—

Anhydrous wool fat	-	-	-	-	10 per cent.
Liquid paraffin	-	-	-	-	10 per cent.
Yellow soft paraffin	-	-	-	-	80 per cent.

which gives a better consistence for the purpose than the usual ointment bases.

The boric acid ointment contains 4 per cent. as

against the 10 per cent. of the boric acid ointment of the British Pharmacopœia. The yellow oxide of mercury ointment is 1 per cent., and in the current Pharmacopœia is an *Oculentum zinci et ichthammolis* containing :—

Zinc oxide	-	-	-	-	-	15 per cent.
Ichthammol	-	-	-	-	-	1 per cent.

In the *Ear, Nose, and Throat Department* the most recent additions are the *Nebulæ* to be sprayed or dropped on to the nasal mucosa. The *Nebula ephedrinæ et mentholis* is of value in catarrh and consists of :—

R. Ephedrine	-	-	-	-	-	5 grains
Menthol	-	-	-	-	-	10 grains
Liquid paraffin	-	-	-	-	-	to 1 ounce

The drops for the ears are made up in olive oil and have rather the composition of ointments.

*Guttæ calaminæ compositæ* :—

R. Calamine	-	-	-	-	-	40 grains
Zinc oxide	-	-	-	-	-	20 grains
Lime water	-	-	-	-	-	180 minims
Olive oil	-	-	-	-	-	to 1 ounce

*Guttæ hydrargyri nitratis* :—

R. Dilute mercuric nitrate ointment	-	-	-	-	-	40 grains
Olive oil	-	-	-	-	-	to 1 ounce

For *obstetric* use there is a *Mistura ergotæ*, and it is interesting to observe that this retains the liquid extract of ergot of the 1914 British Pharmacopœia in preference to the 1932 preparation, a preference which is shared by many prescribers and which recent research has justified.

As has been the practice since at least 1902, the second half of the book consists of notes on the



“official” drugs of the 1932 British Pharmacopœia, and gives practically all that a prescriber needs to know of them. There is finally a section on poisons and antidotes and a number of useful tables.

While the aim of such a book is primarily to help those who are carrying on the work of the hospital, it is hoped also that it may be of interest both to old students of St. Thomas's, who can compare the present Pharmacopœia with its predecessors which they knew, and to those from other hospitals who may like to compare it with their own.

## IV

# THE PHARMACOPŒIA OF THE LONDON HOSPITAL

By CECIL WALL, D.M., F.R.C.P.

*Senior Physician, London Hospital.*

**I**N classical Greek the word Pharmacopœia (Φαρμακοποιία) meant the art of a Pharmacopœius or drug preparer. It was first used to indicate a collection of favourite prescriptions in 1561 in a book published in Basle by Anutius Foesius for use in the city of Metz. It was adopted in 1573 by Adolph Occo when he issued the second edition of his Dispensatory under the title of "Pharmacopœia Augustana"; this book was made official in the city of Augsburg, and five editions were issued under Occo's supervision before the end of the century. The sixth edition, edited by Raymund Minderer, appeared in 1613. In 1618 the London College of Physicians issued an official formulary, and though in the preliminary announcements the term Dispensatory had been employed, the title Pharmacopœia was finally adopted. The word first appeared in English in the Royal proclamation prefixed to the book and ordering the apothecaries to obey its instructions in compounding and dispensing medicines. It was essentially a formulary or dispensatory, and the term pharmacopœia is still used in this sense by the hospitals, though the General Medical Council is gradually narrowing its connotation to a book of standards.

The first edition of the London Pharmacopœia appeared in May, 1618, but was so full of printers' errors and other blemishes that a revised version had

to be issued in the following December. The history of the London Pharmacopœia is a long one, ending only when it merged into the British Pharmacopœia under the control of the General Medical Council in 1858. Successive editions throw interesting sidelights on the progress of medical practice and the changes in medical customs. It was written in Latin, and though English translations were published — Culpeper's in 1649, Salmon's in 1676, and Quincy's in 1721—an official translation was not authorized until the sixth edition was issued in 1788.

In the seventeenth and eighteenth centuries Latin was considered to be the correct language for the educated physician, but its use had certain disadvantages. Until 1692 the College records were written in Latin; in that year the change to English was made because in the diplomatic words of counsel whose advice was sought, "the variety of styles in Latin and the uncertain acceptation of many Latin phrases led to ambiguity." The survival of Latin in physicians' prescriptions to-day is defended on the ground that it is understood by chemists throughout the world and that it is undesirable to allow the patient to know what drugs he is taking. On the other hand, we hear stories of the classical scholar translating "*pro re nata*" as "for the thing that is born," and meet with such solecisms as "*hausti*" and "*lincti*" for the plurals of *haustus* and *linctus*, and drops for the ears translated as "*guttæ pro auris*," which the ribald retranslated as "drops for the wind." Abbreviation in order to hide ignorance of grammar gave the late Sir Stephen Mackenzie the opportunity to fire his favourite jest at his new clerks that physicians' Latin was dog Latin, and so called because it was cur-tailed.

The second edition of the London Pharmacopœia

appeared in 1650 and included some of the then new chemical preparations. The third edition, of 1677, is famous for the introduction of "Aqua Vitæ Hibernorum sive Usquebagh" and of cinchona. The fourth edition showed that in 1721 attention, under the fostering care of Sir Hans Sloane, then president of the College, was being devoted to botany. In 1746 the fifth edition appeared, the first after the outbreak of the epidemic of hospital foundation and development which occurred in the second quarter of the eighteenth century. Mead, Heberden, and Freind were largely responsible for the revision; they aimed at simplicity and rang the death-knell of the four great epidemical antidotes which had enjoyed inexplicable popularity during the long reign of humoral pathology. The number of the constituents of Venice and London treacle, mithridate and diascordium, ceased to be astronomical. The changes were prompted by the need for economy in hospital management and by careful clinical observation of the action of the medicines.

In 1718 a book had been published with the title of "Pharmacopœia Pauperum" with the avowed intention of supplying cheap but efficient formulæ for use in hospitals. It consisted of selections from the London Pharmacopœia, together with a collection of prescriptions by Coatsworth, Mead, Cade, Wadsworth and Hales. As early as 1743, St. Bartholomew's, St. Thomas's and Guy's Hospitals had private pharmacopœias, though they were probably manuscript. Copies survive in the library of the Medical Society of London. The records of the London Hospital show that a private pharmacopœia was in use there in 1749. Presumably it was also manuscript, but I have not been able to discover a copy. The earliest printed hospital pharmacopœia that I have traced are those of St. George's

1768, Guy's 1791, St. Bartholomew's 1793, and St. Thomas's 1800. Apparently the London Hospital pharmacopœia was not printed until 1818. The date suggests that it was the result of the stimulating effect upon the school of the Apothecaries Act of 1815.

The College of Physicians issued the eighth edition of the official Pharmacopœia in 1824. This was immediately assailed with great vigour by Richard Phillips, who was the lecturer in chemistry at the London Hospital. His attack was so successful that he became the chief author of the ninth edition, issued in 1836, the first to include alkaloids and preparations of iodine. Another edition appeared in 1851, but the Medical Act of 1858 placed the control of the pharmacopœia in the hands of the General Medical Council. There was some difficulty at first in securing unanimity between the English, Scottish and Irish authorities, but this was overcome in 1867 and then the British Pharmacopœia was defined as "providing a uniform standard and guide whereby the nature and composition of substances to be used in medicine may be ascertained and determined." Changes, however, could not be rapid; gradually the book was to cease to be a dispensatory and was to become a book of standards for the pharmacist. Even now the evolution is not complete.

In 1853 the London Hospital still used Latin in the edition of their pharmacopœia then published. In 1868 English was used with the reservation that the titles of the drugs and preparations were in Latin so as to conform with the British Pharmacopœia, a usage which persists in the latest edition of 1934.<sup>1</sup> The authors of the edition of 1882 saw clearly that when there was a medical school a hospital pharmacopœia should do more than secure economical administration: they

said in the preface that they had "endeavoured to render the work a useful guide to the students in the art of prescribing."

At that time, to quote from a contemporary text-book of *materia medica*, "the diction of a typical prescription was one of the most crucial tests of an accomplished physician, implying extensive and varied professional attainments." To-day it would seem that prescribing is almost a lost art; proprietary mixtures, pills and tablets, and factory-made physic have replaced the carefully devised formulæ of our predecessors. The hospital pharmacopœias still provide some examples of elegant prescribing for those who take pride in "the nice adjustment of basis, adjuvant, corrective and vehicle to suit the constitution and needs of the individual patient." With the advance of medical knowledge treatment is becoming more often rational and specific, but still the occasions on which the treatment must be symptomatic or based on experience or even on intelligent empiricism far outnumber those on which a specific remedy is available. Though a knowledge of pharmacology may clearly indicate the basis of a prescription, the art of prescribing must come in to help with the dose, the adjuvant, the corrective and the vehicle.

Some of the preparations introduced first at the London Hospital have become famous far beyond the confines of that institution. Ung. hydrarg. co. was introduced by James Scott, a student of the hospital, whose son, John Scott, became one of its surgeons; Scott's dressing is still honoured by inclusion in the British Pharmacopœia. Hutchinson's pill, now dispensed as *Tabella hydrarg. et ipecac. co.*, owed its fame and name to the advocacy of Sir Jonathan Hutchinson,

also a surgeon of the hospital. Of other formulæ some have been devised by the hospital staff, and others, undoubtedly, have been derived from elsewhere. Persistent popularity may not prove efficiency—the history of the great epidemical antidotes proves the contrary—but it suggests some merit. It is, of course, out of the question to discuss here all the formulæ of the London Hospital Pharmacopœia. A few may be selected.

*Aperients.*—Probably aperients are the most extensively used medicines in hospital practice. The official Black Draught, which seems to have obtained an impregnable position in the British Pharmacopœia, is too expensive for hospital use; it is represented now by the Haustus aperiens :—

R.	Mag. sulph.	.	.	.	.	.	grains 150
	Emulsion of chloroform	.	.	.	.	.	minims 7½
	Infusion of senna	.	.	.	.	.	1 oz.

Chloroform is introduced partly as a flavouring agent and partly as a preservative. The emulsion of chloroform is made with tincture of quillaia and is less expensive than the solution in spirit.

The cascara mixture is another favourite aperient; its evolution is of some interest. In 1882 it contained 20 minims of the liquid extract with a drachm of the liquid extract of liquorice and chloroform water to the ounce. In 1901 the cascara was increased to 30 minims, the liquorice reduced to 30 minims, and 30 minims of syrup of ginger was added to prevent griping, and the chloroform water was reduced to half an ounce. In 1914 the cascara went up to a drachm, and instead of the ginger, 40 minims of sal volatile were added. Even this was not sufficiently potent and a compound cascara mixture was introduced and remains the popular aperient mixture :—

R	Liquid extract of cascara	-	-	-	minims 60
	Liquid extract of senna	-	-	-	minims 30
	Liquid extract of liquorice	-	-	-	minims 60
	Tincture of hyoscyamus	-	-	-	minims 30
	Tincture of nux vomica	-	-	-	minims 10
	Emulsion of chloroform	-	-	-	minims 10
	Compound decoction of aloes	-	to		1 oz.

As a prescription it savours of polypharmacy and can scarcely be called “elegant,” but it is reputed to be efficient with the torpid bowels of habitual constipation. Personally I doubt whether it is any more efficient than the Pil. coloc. c̄ hyosc. of the B.P. which, if uncoated, maintains perennial popularity with the same class of patient and goes by the name of “Uncle Henry.”

*Astringents.*—The Hospital Pharmacopœia no longer includes an astringent mixture which formerly was so necessary and popular that a large keg was kept on tap in the receiving-room. Motors have ousted horses, flies, contaminated food and summer diarrhœa. The old formula, however, is worth recording :—

R	Aromatic sulphuric acid	-	-	-	minims 15
	Spirit of chloroform	-	-	-	minims 20
	Compound tincture of camphor	-	-	-	minims 20
	Decoction of logwood	to			the fluid ounce.

Aromatic sulphuric acid was the famous Mynsicht’s elixir of vitriol of the seventeenth and eighteenth centuries, and sentimental regret for its disappearance from the B.P. is mingled with the feeling of satisfaction that it is no longer an important preparation.

*Anti-dyspeptic formulæ.*—In the sixteenth and seventeenth centuries, and probably long before, the value of insoluble carbonates and phosphates in the treatment of dyspepsia was well known; chemistry could not then explain either the nature or the action of the drug, but the reputation of powdered unicorn’s horn (narwhal’s tooth), of calcined snail shells, of crabs’ “eyes” and crabs’ “claws” of the early pharmacopœias



was evidently based on the relief of pain after food on their administration. Aqua Tofana, the favourite poison of the Borgias, seems to have been an acid solution of arsenic; if it was put into a cup made of "unicorn's horn" effervescence occurred and the arsenic was thrown out of solution—small wonder that the value of the rare narwhal's tooth was great in those days! Modern chemistry has brought to us other and more easily obtained insoluble carbonates, and we still use them to relieve gastric pain, which was then so often attributed to poison in the food. Until 1901 it was customary to prescribe the insoluble carbonates of bismuth and magnesium in combination with an emulsifying agent such as compound tragacanth powder; when this addition was found to be unnecessary the most popular prescription became the Pulv. bismuthi co., of which the patient is told to take a teaspoonful stirred up in water. The composition is as follows:—

R	Oxycarbonate of bismuth	-	-	-	10 parts
	Heavy magnesium carbonate	-	-	-	25 parts
	Sodium bicarbonate	-	-	-	25 parts

In the Pulvis calcii carbonatis co., prepared chalk is substituted for the bicarbonate of sodium. The acid and alkaline gentian mixtures are used extensively, but are so well known that comment is needless. The hospital formula for the gentian and rhubarb mixture is designed for economy:—

R	Gentian	-	-	-	-	grains 5
	Rhubarb	-	-	-	-	grains 5
	Ginger	-	-	-	-	grain 1
	Sodium bicarb.	-	-	-	-	grains 10
	Peppermint water to	-	-	-	-	fl. oz. $\frac{1}{2}$
	Macerate for 24 hours and strain.					

Such a prescription is satisfactory in a hospital where the medicine is compounded in large quantities,

but is not suitable for private practice. A better though more expensive formula would be :—

R	Tinct. rhei co.	-	-	-	-	minims	30
	Tinct. zingiberis fort.	-	-	-	-	minims	5
	Liq. ammon. dil.	-	-	-	-	minims	10
	Tinct. gent. co.	-	-	-	-	minims	30
	Aq. menth. pip. ad	-	-	-	-	fl. oz.	$\frac{1}{2}$

A favourite prescription for the dyspepsia of chronic alcoholism is *Mist. capsici sedativa* :—

R	Potassium bromide	-	-	-	-	grains	10
	Sod. bicarb.	-	-	-	-	grains	10
	Tincture of capsicum	-	-	-	-	minims	5
	Strong tincture of ginger	-	-	-	-	minims	5
	Infusion of quassia to	-	-	-	-	fl. oz.	$\frac{1}{2}$

*Fever mixtures.*—Simple diaphoretic mixtures are often of considerable value when the temperature is high. *Mist. ammon. acet. co.* is an example :—

R	Spirit of nitrous ether	-	-	-	-	minims	30
	Strong solution of ammonium acetate	-	-	-	-	minims	30
	Aromatic spirit of ammonia	-	-	-	-	minims	20
	Chloroform water to	-	-	-	-	fl. oz.	$\frac{1}{2}$

*Cough mixtures.*—In the dry stage of bronchial catarrh nauseating expectorants act by reflexly exciting the secretion; to secure this end the drug must be given in doses just short of producing the sensation of nausea. The ammonia and ipecac. mixture of the London Hospital contains 20 minims of the tincture of ipecac. with 3 grains of ammon. carb. in some camphor water, and the dose of ipecac. is not found to be at all excessive. Acting in a somewhat similar manner is the standard cough mixture which is taken mixed with hot water :—

R	Sodium chloride	-	-	-	-	grains	3
	Sodium bicarbonate	-	-	-	-	grains	10
	Emulsion of chloroform	-	-	-	-	minims	5
	Oil of anise	-	-	-	-	minim	$\frac{1}{25}$
	Water to	-	-	-	-	fl. oz.	$\frac{1}{2}$

Seeing that aniseed water is no longer included in the B.P., 5 minims of the aqua anethi concentrata may be substituted for the oil of anise in private practice;

moreover, it is often desirable to colour the medicine by adding some compound tincture of cardamom.

In the more chronic forms of bronchitis the alkaline iodide mixture is of great value. Clinical experience supports the pharmacologists' view that large doses of potassium iodide are of less value than the small ones; the formula is :—

R	Pot. iod.	-	-	-	-	-	grains 3
	Ammon. carb.	-	-	-	-	-	grains 3
	Pot. bicarb.	-	-	-	-	-	grains 10
	Camphor water to	-	-	-	-	-	fl. oz. $\frac{1}{2}$

When the coughing reflex is weak it is often useful to add tinct. nucis vom. to the mixture. When there is evidence of bronchial spasm, inhibition of the vagus is desirable; in such circumstances stramonium is often combined with potassium iodide. The Mist. pot. iod. et stramonii contains the following :—

R	Pot. iod.	-	-	-	-	-	grains 3
	Tincture of stramonium	-	-	-	-	-	minims 10
	Liquid extract of liquorice	-	-	-	-	-	minims 20
	Chloroform water to	-	-	-	-	-	fl. oz. $\frac{1}{2}$

The dose of stramonium is small because some patients are readily affected by it; generally it is necessary to increase the dose until it causes some dryness of the mouth and then to make a slight reduction.

*Sedative cough mixtures.*—The most commonly employed is Gee's linctus, of which the formula was borrowed from St. Bartholomew's Hospital—equal parts of tinct. opii camphorat. oxymel of squill, and syrup of tolu— but a similar preparation is found in the old Mist. scillæ co. :—

R	Vinegar of squill	-	-	-	-	-	minims 15
	Camphorated tincture of opium	-	-	-	-	-	minims 20
	Emulsion of chloroform	-	-	-	-	-	minims 10
	Infusion of gentian to	-	-	-	-	-	fl. oz. $\frac{1}{2}$

*Blunderbuss prescriptions.*—The old pathology which obtained for so many centuries held that disease was

due to excess or defect of one or more of the four humours: blood, phlegm, black bile or yellow bile, and treatment was based on the hypothesis that the disturbance could be corrected by the administration of appropriate drugs—"contraria contrariis curantur." Uncertainty as to the action of the drugs led to polypharmacy in the hope that if enough were given some would procure the desired result. The modern reversion to humoral pathology under the more attractive and "scientific" title of endocrine imbalance seems to be associated with a like expectation. This is apparent not only in the proprietary mixtures of the wholesale druggists, but even in the hospital pharmacopœias.

The last edition of the London Hospital Pharmacopœia contains several examples of formulæ which can be justified only by the results of practical experience; at first sight it would seem to be undesirable to combine pharmacological and chemical incompatibles in the same prescription, for instance, in *Mistura ammon. carb. co.* :—

R	Ammon. carb.	-	-	-	-	grains 4
	Tincture of squill (B.P. 1914)	-	-	-	-	minims 10
	Camphorated tincture of opium	-	-	-	-	minims 10
	Syrup of tolu	-	-	-	-	drachm 1
	Camphor water to	-	-	-	-	fl. oz. $\frac{1}{2}$

There is a stimulant and a sedative of the respiratory centre and an alkaline carbonate to interact with the benzoic acid of the paregoric. In the *Mist. oxymelis scillæ* the pharmacologist might ask why the potassium iodide is introduced to increase the bronchial secretion and the opium to check expectoration; the formula is :—

R	Oxymel of squill	-	-	-	-	minims 15
	Camphorated tincture of opium	-	-	-	-	minims 20
	Potassium iodide	-	-	-	-	grains 2
	Dextrose	-	-	-	-	grains 30
	Chloroform water to	-	-	-	-	fl. oz. $\frac{1}{4}$

Practical experience may show that the pharmacologist's inquiry is indiscreet. Another ultra-modern prescription, seemingly designed as a panacea, but unlikely to captivate pharmacists, pharmacologists or the older generation of physicians, is the *Mist. ferri alkalina*, of which the formula is :—

R.	Citrate of iron and ammonium	-	-	grains 20
	Sodium bicarbonate	-	-	grains 15
	Solution of arsenic	-	-	minims 3
	Aromatic spirits of ammonia	-	-	minims 30
	Tincture of nux vomica	-	-	minims 10
	Infusion of calumba to	-	-	fl. oz. $\frac{1}{2}$

Possibly because of its eponymous title, Broadbent's mixture retains a measure of popularity. The therapeutic intention is not easy to understand, but it demonstrates that a skilled pharmacist may circumvent chemical incompatibility for about 48 hours. It contains :—

R.	Ammoniated solution of quinine	-	-	fl. drachm 1
	Strong solution of ammonium acetate	-	-	minims 15
	Camphorated tincture of opium	-	-	fl. drachm $\frac{1}{2}$
	Ammonium carbonate	-	-	grains 2
	Tragacanth	-	-	grain $\frac{1}{2}$
	Peppermint water to	-	-	fl. oz. $\frac{1}{2}$

In the present overcrowded state of the medical curriculum it is scarcely possible for the student to study intensively the subjects of pharmacy and materia medica. The British Pharmacopœia has become a book of standards. The newly qualified practitioner needs help in the art of prescribing, and his own hospital pharmacopœia should provide that help; it should enable him to employ those medicines of which he has seen the effect when clerking in the wards. The conditions which govern dispensing in a hospital are, however, different from those which obtain in private

practice, and consequently while approving the large majority of the formulæ given in our pharmacopœia, I have pointed out some which might lead to disappointment if prescribed outside the walls of the institution. Perhaps when the promised reform of the medical curriculum is effected, greater stress will be laid upon the training in materia medica and pharmacy, and they will be studied at a period more appropriate than at present. Surely the craftsman should know his tools and how to use them with economy and skill.

### Reference

<sup>1</sup> *The Pharmacopœia of the London Hospital*. Compiled by C. H. Sykes, Ph.C., M.P.S., Head Pharmacist to the Hospital, London, 1934.

## THE PHARMACOPŒIA OF THE MIDDLESEX HOSPITAL

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THE archives of the Middlesex Hospital do not contain any reference to the publication of its first pharmacopœia, nor does there appear to be any reference to the issues of subsequent editions. The earliest which is preserved in the Hospital is dated 1913, and is merely a reprint of the edition of 1899. If it was ever the custom to attach to a prescription the name of the man who first brought it into general use, it had been given up before that date, and it has been impossible to trace the origin of any of them to one of the former members of the honorary staff. None of our prescriptions has attained a wide popularity outside our own walls comparable with Guy's pill, Gee's linctus, or Gregory's powder.

With the passage of time a gradual process of evolution takes place in every pharmacopœia, both in its contents and the way in which they are presented, and when our pharmacopœia was revised in 1915 many changes were made; some prescriptions were discarded, others were modified, and a number of new ones were introduced. Doses in the metric system were printed for the first time side by side with those in the imperial system, but they were so little used, that they have been omitted in the last edition. A comparison of the edition of 1913 with that of 1915 shows one of these evolutionary changes, and marks the date at which a great alteration in the treatment of hæmatemesis took

place. This change is the disappearance from the latter edition of the two time-honoured formulæ, enema nutriens (A) and (B), the former containing peptonized beef, 60 grains, extract of malt, 60 grains, and gruel, 2 fluid ounces. At this date it had been recognized that only saline and glucose can be absorbed by the rectum and that the meals formerly given by this route were not only useless, but harmful.

In the latest edition, that of 1933, the recommendations made in the British Pharmacopœia have been followed, one of which is the substitution for Roman of Arabic numerals. Some of the formulæ, which appeared in the Hospital pharmacopœia of 1913, are very similar to compound preparations of the British Pharmacopœia, and to avoid confusion they have been discarded and replaced by compound preparations from the British Pharmacopœia, the remainder of which have also been included for the sake of completeness.

In previous editions the mixtures for use in the children's department were made up to  $1\frac{1}{2}$  fluid ounces, the dose advised for children of one to two years of age being 1 to 2 drachms. This made it difficult to tell exactly what dose of each ingredient was being given. The arrangement has now been simplified, and they are made up to 60 minims, a dose suitable for a child aged one year.

Among the formulæ for general use there are a number of *aperients*, but only one differs appreciably from those to be found in the pharmacopœias of other large hospitals. This is the emulsion of liquid paraffin which, owing to the reduced content of gum, is much thinner than most emulsions of paraffin and is therefore easier to dispense and more pleasant to drink. It acts well and patients do not complain of the leakage



of oil, which is so often troublesome when pure paraffin is taken.

R	Paraffini liquidi	-	-	-	-	$\frac{1}{2}$ fluid ounce
	Pulveris acaciæ	-	-	-	-	20 grains
	Sodii benzoatis	-	-	-	-	$\frac{1}{4}$ grain
	Sodii chloridi	-	-	-	-	$\frac{1}{4}$ grain
	Vanillini	-	-	-	-	$\frac{1}{80}$ grain
	Glusidi	-	-	-	-	$\frac{1}{80}$ grain
	Aquam ad	-	-	-	-	1 fluid ounce

*Formulæ for diseases of the alimentary tract.*—One of the prescriptions most frequently dispensed to out-patients is the alkaline gentian mixture, which has been improved and is now :—

R	Sodii bicarbonatis	-	-	-	10 grains
	Tincturæ zingiberis mitis	-	-	-	10 minims
	Tincturæ rhei compositæ	-	-	-	3 minims
	Spiritus chloroformi	-	-	-	5 minims
	Infusum gentianæ ad	-	-	-	1 fluid ounce

Another popular mixture designed for the treatment of flatulent dyspepsia has remained unchanged for at least thirty years :—

R	Sodii bicarbonatis	-	-	-	10 grains
	Spiritus ammoniæ aromatici	-	-	-	20 minims
	Spiritus chloroformi	-	-	-	10 minims
	Infusum caryophylli recens ad	-	-	-	1 fluid ounce

The modern treatment of peptic ulcer by means of large doses of alkalis is reflected by the presence of two powders containing the light and heavy carbonates of magnesium and chalk, but in different proportions. The old powder containing bismuth and the carbonates of magnesium has been retained and the following new one has been added :—

R	Kaolini	-	-	-	-	20 grains
	Magnesii carbonatis levis	-	-	-	-	20 grains
	Magnesii carbonatis ponderosi	-	-	-	-	20 grains

The kaolin is not only cheaper, but probably has an additional value as an absorbent of toxins.

The Haustus cretæ co. of 1899 is now made up with chloroform water instead of distilled water, and is as

follows :—

R	Cretæ preparatæ	-	-	-	15 grains
	Mucilaginis acaciæ	-	-	-	60 minims
	Tincturæ catechu	-	-	-	20 minims
	Aquam chloroformi ad	-	-	-	1 fluid ounce

It is a useful formula for diarrhœa.

Both valerian and asafetida are reputed to be carminatives, but the continued presence in the Pharmacopœia of a mixture containing both of them is due rather to their nauseous taste than to their pharmacological action. The mixture is retained to satisfy the patients who think that the stronger the smell and the more unpleasant the taste, the greater must be the efficacy of a medicine. Its value is considerable, if it is used with discretion, and, strangely enough, it is popular with the patients.

R	Tincturæ valerianæ ammoniatæ	-	20 minims
	Tincturæ asafetidæ	-	20 minims
	Infusum quassia recens ad	-	1 fluid ounce

*Cough mixtures.*—The Haustus ipecacuanhæ cum ammonia has its counterpart in most hospital pharmacopœias and is a useful expectorant mixture, while the Haustus ipecacuanhæ co. is both sedative and expectorant. Though its ingredients might be thought to neutralize each other, the clinical experience of more than one generation of physicians has proved its value. It is given for acute bronchitis and is as follows :—

R	Tincturæ ipecacuanhæ	-	-	-	10 minims
	Tincturæ opii camphoratæ	-	-	-	30 minims
	Liquoris ammonii acetatis fortis	-	-	-	30 minims
	Aquam ad	-	-	-	1 fluid ounce

For the early stage of acute bronchitis, when there is congestion of the mucous membrane and the cough is dry, the mixture, which was added to the pharmacopœia on the recommendation of the late Sir James

Kingston Fowler, the *Haustus sodii chloridi* co. sometimes gives relief. It is as follows :—

R	<i>Sodii chloridi</i>	-	-	-	5 grains
	<i>Sodii bicarbonatis</i>	-	-	-	5 grains
	<i>Spiritus chloroformi</i>	-	-	-	5 minims
	<i>Aquam cari ad</i>	-	-	-	1 fluid ounce

A useful expectorant mixture for chronic bronchitis is the *Haustus senegæ* co. :—

R	<i>Ammonii carbonatis</i>	-	-	-	3 grains
	<i>Tincturæ scillæ</i>	-	-	-	20 minims
	<i>Olei pimentæ</i>	-	-	-	1 minim
	<i>Spiritus chloroformi</i>	-	-	-	10 minims
	<i>Infusum senegæ recens ad</i>	-	-	-	1 fluid ounce

The fresh infusion prevents the formation of a deposit in the mixture.

The *Haustus potassii iodidi cum stramonio* is designed for the treatment of asthmatic patients in the intervals between their attacks or in chronic bronchitis, when the cough is spasmodic. It contains :—

R	<i>Potassii iodidi</i>	-	-	-	3 grains
	<i>Tincturæ stramonii</i>	-	-	-	15 minims
	<i>Extracti glycyrrhizæ liquidi</i>	-	-	-	20 minims
	<i>Aquam chloroformi ad</i>	-	-	-	1 fluid ounce

In asthma the amount of stramonium should be increased until it causes dryness of the mouth, and then reduced, until this effect is no longer troublesome, and this, which is the optimum dose for the individual, should be continued. Though the mixture has been dispensed unofficially for a long time, it appeared officially for the first time in the 1933 edition.

For an irritating cough there is the *Linctus pectoralis*, which is similar in composition to Gee's linctus, a preparation often dispensed, but never incorporated in the pharmacopœia. The formula for the *Linctus pectoralis* is :—

R	<i>Oxymellis scillæ</i>	-	-	-	10 minims
	<i>Tincturæ opii camphoratæ</i>	-	-	-	10 minims
	<i>Spiritus ætheris nitrosi</i>	-	-	-	5 minims
	<i>Aquam ad</i>	-	-	-	60 minims

*Urinary antiseptics and diuretics.*—The usual mixture containing both hexamine and acid sodium phosphate, which is in use in most of the large hospitals, is unsatisfactory owing to its gradual decomposition with the liberation of formaldehyde. The Middlesex is one of the few hospitals which dispenses the two chief ingredients separately with the direction that half an ounce of each solution should be mixed immediately before being taken :—

R	Hexaminæ	-	-	-	-	10 grains
	Tincturæ hyoscyami	-	-	-	-	30 minims
	Infusum buchu recens ad	-	-	-	-	$\frac{1}{2}$ fluid ounce
R	Sodii phosphatis acidi	-	-	-	-	20 grains
	Infusum buchu recens ad	-	-	-	-	$\frac{1}{2}$ fluid ounce

For pyelitis there is a mixture containing 30 grains of potassium citrate, a more alkaline mixture made by the addition of 30 grains of sodium bicarbonate, and a third to which 30 minims of tincture of hyoscyamus has been added for use, when pain is severe.

There are no formulæ containing a diuretic acting directly on the renal cells, though prescriptions with one or other of them as an ingredient are in regular use. It is with regret that one notices the omission of the old *Haustus scoparii* from the 1933 edition :—

R	Potassii acetatis	-	-	-	-	20 grains
	Tincturæ scillæ	-	-	-	-	10 minims
	Spiritus ætheris nitrosi	-	-	-	-	30 minims
	Infusum scoparii ad	-	-	-	-	1 fluid ounce

It sometimes gave satisfactory results when the remedies in commoner use had failed, but its already limited sphere of usefulness has been encroached upon by the newer and more active proprietary compounds of mercury, such as salyrgan.

*Medicines for special diseases.*—When gout was still common there was a *Haustus pot. iod. c. colchico*, but this was omitted in the edition of 1915. In the last

edition a new prescription has been introduced without potassium iodide and with the tincture instead of the obsolete vinum colchici. This is :—

R	Tincturæ colchici	-	-	-	10 minims
	Potassii citratis	-	-	-	20 grains
	Magnesii sulphatis	-	-	-	20 grains
	Infusum buchu recens ad	-	-	-	1 fluid ounce

Another disease the incidence of which has changed very greatly since 1915 is encephalitis lethargica. This became common in 1918, and a prescription has been inserted in the last edition for the treatment of its sequelæ.

R	Hyoscinæ hydrobromidi	-	-	$\frac{1}{100}$ grain
	Tincturæ lavandulæ compositæ	-	-	5 minims
	Aquam chloroformi ad	-	-	1 fluid ounce

The modern treatment of thyrotoxicosis has led to the addition of *Haustus iodi*, which contains 0·06 gm. of free iodine in each ounce :—

R	Liquoris iodi mitis	-	-	-	41½ minims
	Aquam ad	-	-	-	1 fluid ounce

This preparation, which, unlike the more familiar Lugol's solution, contains no potassium iodide, is most often used for preparing patients for partial thyroidectomy, and its effects are determined by estimations of the basal metabolic rate.

Recent work has proved that much larger doses of iron are often needed for the cure of anæmias than were formerly considered to be necessary, and this is particularly true of the hypochromic microcytic anæmias of middle-aged women. This change of practice has induced the compilers of the *Pharmacopœia* to increase the strength of the *Haustus ferri et ammonii citratis*, and it now contains 20 grains of iron and ammonium citrate instead of 5 grains to the ounce, a dose which had remained unchanged for more than thirty years.

One more preparation from the general formulæ may

be selected for mention. The Collutorium phenolis cum iodo is a valuable antiseptic mouth-wash for use after the extraction of teeth :—

R	Phenolis liquefacti	-	-	-	30 minims
	Liquoris iodi mitis	-	-	-	15 minims
	Aquam ad	-	-	-	1 fluid ounce

One teaspoonful to half a tumblerful of water.

The special departments have their own preparations, those for the Children's Department being called *misturæ* to distinguish them from the *haustus*. Although their number has been increased greatly in the last two editions, most of the old formulæ have been discarded and the new ones have been borrowed from sources outside the hospital.

From the preparations in use in the Ear, Nose, and Throat Department, the *Nebula camphoræ composita* may be selected for mention :—

R	Camphoræ	-	-	-	3 grains
	Mentholis	-	-	-	3 grains
	Guaiacolis	-	-	-	3 minims
	Olei cinnamoni	-	-	-	1 minim
	Paraffinum liquidum ad	-	-	-	1 fluid ounce

This makes an agreeable nasal spray and is used for many inflammatory conditions of the nose.

The Eye Department has a large number of formulæ from which two are selected. The *Oculentum ichthammolis cum zinci oxido* :—

R	Ichthammolis	-	-	-	1 per cent.
	Zinci oxidi	-	-	-	15 per cent.
	Paraffinum molle flavum ad	-	-	-	100 per cent.

for chronic blepharitis; and the *Guttæ hyoscinae* :—

R	Hyoscinae hydrobromidi	-	-	-	0·25 per cent.
	Chlorbutolis	-	-	-	0·3 per cent.
	Aquam destillatum ad	-	-	-	100 per cent.

a mydriatic used when atropine causes irritation. The addition of chlorbutol makes this superior to the hyoscine drops in use at some of the other large hospitals.

From the formulæ for use in the Skin Department it

is difficult to single out one more worthy of mention than another. The value of magnesium sulphate for the treatment of boils has been recognized officially, and a *Pasta magnesi sulphatis* has been included for the first time in the 1933 edition :—

R	Magnesi sulphatis exsiccati	-	-	360 grains
	Glycerini	-	-	180 minims

The *Pharmacopœia* is completed by a short article on the treatment of poisoning, the common names of certain poisonous substances, the relations of the metric and imperial measures, and a table of doses. The diet sheets and notes on case-taking, which appeared in former editions, have been omitted in order to reduce its bulk and weight and so induce students to carry it in their pockets.

## VI

### THE PHARMACOPŒIA OF ST. GEORGE'S HOSPITAL

By HUGH GAINSBOROUGH, M.D., F.R.C.P.

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THE pharmacopœia at present in use in St. George's Hospital was completely revised in 1927, but in this, as in any such revision, certain prescriptions have been retained for sentimental and historical rather than therapeutic reasons. The revision seemed at the time to be ruthless, yet since then the Hospital dispenser has found that the use of many favoured mixtures has declined. Fashion in prescribing and in treatment is still a large factor in the choice of drugs; discarded or rarely used preparations are again found to be useful, new ones are offered temptingly in expensive form. To-day, however, pharmacological teaching has become more closely allied to rational therapeutics, teachers and students of medicine, seeking specific and detectable effects from their drugs, tend to use pure preparations in simple form and so the art of prescribing is being rapidly forgotten. An elegant prescription is not necessarily other than a placebo, a confession of therapeutic or even diagnostic weakness, perhaps often a substitute for the investigation of a neurosis.

The hospital pharmacopœia continues to exist, justified largely by an effort to obtain economy. Stock medicines for many purposes can be made elegantly and cheaply, but such attempts at economy are easily frustrated by rapid changes of medicines prescribed,



especially on in-patients' medicine sheets. The greatest economy can only be hoped for by the application of pharmacological knowledge, no effective drug is too costly for health, but it is difficult sometimes to control the house physician in search of knowledge from expensive clinical experiment with new drugs or with multiple prescriptions evidencing lack of knowledge or confusion of thought. For example, a prescription containing tincture of belladonna and tincture of hyoscyamus together makes it difficult to estimate the total *l*-hyoscyamine to be given. Chemical knowledge alone is generally insufficient to guide in incompatibility, indeed, it is easier to learn pharmacology than the incompatibles in pharmacy.

The earliest pharmacopœia in use at St. George's Hospital referred to is that of 1840, and it appears to be that of the Westminster Hospital, though the separation of St. George's and Westminster took place more than a century earlier. In 1744 the hospital was provided with male and female "salivating" wards at the time when mercury was so freely prescribed that patients salivated profusely and unpleasantly. At the beginning of the nineteenth century phlebotomy and leeching were favourite treatments—indeed, the hospital received fortnightly estimates for the supply of leeches. Later, H. W. Fuller, who was physician to the hospital from 1857 to 1873, was described as having "great faith in drugs which he ordered in large quantities and peculiar combinations." On the other hand, Thomas Young, probably the greatest scientist in the history of the hospital, who was physician from 1811–1829, scorned the prevailing fashionable treatments with mercury, antimony, and bleeding, and preferred to prescribe nothing at all.

The 1840 pharmacopœia contained about forty

different stock pills, whereas the 1927 edition contains eight only, of which *Pilula colocynthis cum calomelane*, *Pilula colocynthis cum hydrargyro* and *Pilula hydrargyri cum rheo* are practically identical with those used almost a century earlier. A few other prescriptions have been preserved from that time to the present day with little or no modification, such as *Lotio ammonii chloridi*, "evaporating lotion." The 1840 prescription is :—

R	<i>Ammoniã hydrochloratis</i>	-	-	-	1 ounce
	<i>Aceti destillati</i>	-	-	-	2 fl. ounces
	<i>Spiritus rectificati</i>	-	-	-	2 fl. ounces
	<i>Aquam</i>	-	-	-	12 fl. ounces

The 1927 prescription is :—

R	<i>Ammonii chloridi</i>	-	-	-	30 grains
	<i>Acidi acetici diluti</i>	-	-	-	60 minims
	<i>Alcohol, 90 per cent.</i>	-	-	-	60 minims
	<i>Aquam destillatam ad</i>	-	-	-	1 fl. ounce

The early cough mixture, *Mistura pro tussi*, is not without interest and is noteworthy for the use of treacle as a flavouring agent :—

R	<i>Aceti scillã</i>				
	<i>Vini ipecacuanhã aa</i>	-	-	-	$\frac{1}{2}$ fl. ounce
	<i>Tincturã opii</i>	-	-	-	15 minims
	<i>Theriacã</i>	-	-	-	1 fl. ounce
	<i>Misturã acaciã</i>				
	<i>Misturã camphorã aa</i>	-	-	-	3 fl. ounces
<i>Dosis</i> $\frac{1}{2}$ –1 fl. ounce.					

#### PRESENT PRESCRIPTIONS

In the present pharmacopœia there has been an increase in the number of *Collunaria* and *Collutoria*, of which can be noted *Collutorium detergens*—the commonly used ward mouthwash :—

R	<i>Liquoris potassæ</i>	-	-	-	8 minims
	<i>Acidi carbolici liquefacti</i>	-	-	-	4 minims
	<i>Tincturã cocci</i>	-	-	-	1 minim
	<i>Aquam destillatam</i>	-	-	-	ad 1 fl. ounce

There is also *Collutorium potassii chloratis compositum*, introduced by the venereal disease department for use during administration of mercury or bismuth :—

R	Potassii chloratis	-	-	-	-	10 grains
	Aluminis	-	-	-	-	10 grains
	Aquam destillatam ad	-	-	-	-	1 fl. ounce

Of the *enemas* one preparation much used in the gynæcological department immediately after operations for the relief of pain and restlessness is *Enema sedativum* :—

R	Sodii bromidi	-	-	-	-	60 grains
	Lithii acetylsalicylatis	-	-	-	-	10 grains
	Aquam destillatam ad	-	-	-	-	5 fl. ounces

Signa :—To be mixed with the same quantity of warm water and given immediately after operation.

An interesting example which was only just omitted in the 1927 edition is *Enema rutæ*, remarkably effective for flatulent distension, but now replaced by *Enema terebinthinæ* :—

R	Rutæ foliorum	-	-	-	-	6 parts
	Carui seminum	-	-	-	-	6 parts
	Lauri nobilis seminum	-	-	-	-	6 parts
	Piperis nigri	-	-	-	-	1 part

In pulverem reduce, misce.

R	Asafetidæ	-	-	-	-	2 parts
	Mellis	-	-	-	-	44 parts
	Aquæ destillatæ	-	-	-	-	q.s.

Solve calore modico.

M. paulatim.

Signa :—One hundred and eighty grains to be used to twenty fluid ounces of infusion of chamomile to prepare *enema rutæ*.

Only one gargle attracts attention, *Gargarisma chlori*, in which the free chlorine is supposed to be particularly effective for the treatment of septic tonsillitis, but the preparation is a strong one :—

R	Potassii chloratis	-	-	-	-	1 grain
	Acidi hydrochlorici	-	-	-	-	3 minims
	Aquam destillatam ad	-	-	-	-	1 fl. ounce

(Let the salt and the acid stand together for not less than half an hour in a dry bottle, loosely stoppered. Add the water gradually, shaking after each addition.)

The *guttæ* used in the ophthalmic department are not remarkable and are the usual preparations of alkaloids used for anæsthesia or mydriasis. Of the *guttæ* used in the aural department the most used are *Guttæ spiritus*, which consists of 50 per cent. alcohol, and the *Guttæ acidi carbolici*, which consists of 25 grains of carbolic acid in an ounce of glycerin.

## MIXTURES

Every mixture, whether for adults or children, is termed *Haustus*, and there are of these 53 for general use and 12 for children.

*Haustus æthereus*, or ether mixture, is at hand in all the wards and surgeries for the immediate treatment of fainting attacks. Its continued use is evidence of its efficacy.

R	<i>Spiritus ætheris</i>	-	-	-	-	60 minims
	<i>Spiritus ammoniæ aromatici</i>	-	-	-	-	30 minims
	<i>Syrupi</i>	-	-	-	-	30 minims
	<i>Aquam pimentæ ad</i>	-	-	-	-	1 fl. ounce

Only one diaphoretic mixture is much used now—the *Haustus ammonii acetatis* :—

R	<i>Spiritus ætheris nitrosi</i>	-	-	-	-	20 minims
	<i>Liquoris ammonii acetatis</i>	-	-	-	-	$\frac{1}{2}$ fl. ounce
	<i>Aquam destillatam ad</i>	-	-	-	-	1 fl. ounce

Quinine mixtures are now rarely prescribed, but one remains to mark its previous extensive use for all fevers—*Haustus quininae effervescens* :—

(1) R	<i>Potassii bicarbonatis</i>	-	-	-	-	20 grains
	<i>Aquam destillatam ad</i>	-	-	-	-	1 fl. ounce

Signa : The alkaline mixture.

One ounce to be mixed with one ounce of the acid mixture and taken whilst effervescing.

(2) R	<i>Quininae sulphatis</i>	-	-	-	-	2 grains
	<i>Acidi citrici</i>	-	-	-	-	14 grains
	<i>Aquam destillatam ad</i>	-	-	-	-	1 fl. ounce

Signa : The acid mixture.

Of the mixtures used for dyspepsia the most noteworthy is the favourite of the out-patient, a carminative mixture made up in large quantities, and which if allowed to stand for a day or so before straining off or decanting produces a clear liquid which is, indeed, an elegant preparation. This *Haustus caryophyllatus* cannot be made successfully if concentrated infusion is used instead of the fresh preparation :—

R.	<i>Sodii bicarbonatis</i>	-	-	-	-	10 grains
	<i>Spiritus ammonii aromatici</i>	-	-	-	-	20 minims
	<i>Spiritus chloroformi</i>	-	-	-	-	20 minims
	<i>Infusum caryophylli ad</i>	-	-	-	-	1 fl. ounce

Cola.

Of mixtures used for diarrhoea the present example is the *Haustus hæmatoxyli opiatu*s :—

R.	<i>Tincturæ opii</i>	-	-	-	-	5 minims
	<i>Spiritus chloroformi</i>	-	-	-	-	10 minims
	<i>Tincturæ catechu</i>	-	-	-	-	60 minims
	<i>Decoctum hæmatoxyli ad</i>	-	-	-	-	1 fl. ounce

but the *Haustus cretæ opiatu*s is much more popular :—

R.	<i>Cretæ præparatæ</i>	-	-	-	-	20 grains
	<i>Tincturæ opii</i>	-	-	-	-	5 minims
	<i>Tincturæ cardamomi compositæ</i>	-	-	-	-	30 minims
	<i>Syrupi</i>	-	-	-	-	60 minims
	<i>Olei menthæ piperitæ</i>	-	-	-	-	3 minims
	<i>Aquam destillatam ad</i>	-	-	-	-	1 fl. ounce

Of mixtures containing hypnotics there are four, including *Haustus chloral* and *Haustus chloral et sodii bromidi*, which is probably prescribed in much too routine a fashion in the wards :—

R.	<i>Chloral hydratis</i>	-	-	-	-	15 grains
	<i>Sodii bromidi</i>	-	-	-	-	20 grains
	<i>Syrupi</i>	-	-	-	-	30 minims
	<i>Spiritus chloroformi</i>	-	-	-	-	20 minims
	<i>Aquam menthæ piperitæ ad</i>	-	-	-	-	1 fl. ounce

There is also *Haustus chloralamidi* :—

R.	<i>Chloral formamide</i>	-	-	-	-	30 minims
	<i>Alcohol 90 per cent.</i>	-	-	-	-	60 minims
	<i>Tincturæ cardamomi compositæ</i>	-	-	-	-	30 minims
	<i>Aquam chloroformi ad</i>	-	-	-	-	1 fl. ounce

Chloralamide is a drug not to be omitted from the practitioners' armamentarium—it is sometimes surprisingly effective when barbiturates or other drugs fail lamentably. Haustus paraldehydi should be mentioned. It is described as follows :—

R	Paraldehydi	-	-	-	-	60 minims
	Syrupi aurantii	-	-	-	-	60 minims
	Aquam destillatam ad	-	-	-	-	1 fl. ounce

but in practice it is necessary to add tincture of quillaia, 10–20 minims.

Cough medicines include two mixtures, Haustus ipecacuanhæ ammoniatus :—

R	Ammonii carbonatis	-	-	-	4 grains
	Tinct. ipecacuanhæ	-	-	-	10 minims
	Tincturæ opii camphoratæ	-	-	-	15 minims
	Aquam camphoræ ad	-	-	-	1 fl. ounce

This is slightly alkaline and potassium iodide is often added thereto. Haustus oxymellis scillæ is slightly acid and hence incompatible with iodides and carbonates :—

R	Tincturæ opii camphoratum	-	-	-	20 minims
	Spiritus ætheris nitrosi	-	-	-	20 minims
	Oxymellis scillæ	-	-	-	90 minims
	Aquam destillatam ad	-	-	-	1 fl. ounce

Here can be mentioned the *linctus*. Gee's linctus is much used under the old name of Linctus camphoræ compositus, and is a mixture of equal parts of syrup of tolu, camphorated tincture of opium, and oxymel scillæ, and is borrowed from St. Bartholomew's Hospital. Linctus apomorphinæ eum codeia is somewhat unusual :—

R	Apomorphinæ	-	-	-	$\frac{1}{10}$ grain
	Codeinæ phosphatis	-	-	-	$\frac{1}{12}$ grain
	Acidi hydrocyanici diluti	-	-	-	2 minims
	Syrupum pruni virginianæ ad	-	-	-	60 minims

Another preparation, Linctus morphinæ hydrocyanicus is generally termed "Ogle's drops," after

Dr. J. W. Ogle, who was physician to the hospital from 1857-1876. Three physicians of that name have served the hospital during three-quarters of a century, and Cyril Ogle, the last bearer of that name, is still well remembered for his clinical skill. The prescription is :—

R	Acidi hydrocyanici diluti	-	-	-	1 minim
	Liquoris morphinæ acetatis	-	-	-	3 minims
	Oxymel scillæ ad	-	-	-	60 minims

Signa :—To be taken when the cough is troublesome, not more than three or four times a day.

#### TONICS

There are a number of so-called tonics, of which the most popular is *Haustus strychninæ amarus* :—

R	Tinct. gentianæ compositæ	-	-	-	30 minims
	Liq. strychninæ hydrochloridi	-	-	-	3 minims
	Acidi phosphorici diluti	-	-	-	15 minims
	Spiritus chloroformi	-	-	-	10 minims
	Infusum gentianæ compositum ad	-	-	-	1 fl. ounce

The tonic mixtures containing small doses of iron are falling into disuse. A mixture which fairly well disguises the taste of male fern is *Haustus extracti filicis liquidi* :—

R	Extracti filicis liquidi	-	-	-	60 minims
	Tincturæ quillaie	-	-	-	30 minims
	Syrupi zingiberis	-	-	-	60 minims
	Aquam menthæ piperitæ ad	-	-	-	1 fl. ounce

#### PRESCRIPTIONS FOR SPECIAL DEPARTMENT

The venereal diseases department has inserted three similar mixtures containing respectively buchu, oleum santali, and copaiba, which are used for urinary disinfection. The *Haustus copaibæ* is given as an example :—

R	Copaibæ	-	-	-	15 minims
	Tincturæ hyoscyami	-	-	-	30 minims
	Sodii citratis	-	-	-	30 grains
	Mucilaginis acaciæ	-	-	-	60 minims
	Aquam menthæ piperitæ ad	-	-	-	1 fl. ounce

Of the lotions the only characteristic prescription is *Lotio excitans*, which is much used to promote the growth of hair in temporary alopecia, and is as follows :—

R	Hydrargyri perchloridi	-	-	-	-	$\frac{1}{2}$ grain
	Acidi acetici glacialis	-	-	-	-	3 minims
	Resorcini	-	-	-	-	5 grains
	Chloral hydratis	-	-	-	-	10 grains
	Tincturæ cantharidis	-	-	-	-	20 minims
	Alcohol, 60 per cent., ad	-	-	-	-	1 fl. ounce

As mentioned on page 69, there are only eight pills in the last pharmacopœia, and of these six are purgative, of which the composition of three has remained practically unchanged for a hundred years. The list includes *Pilula digitalis composita*, also known as Baillie's or Guy's or Addison's pill :—

R	Digitalis foliorum	-	-	-	-	$\frac{1}{2}$ grain
	Scillæ	-	-	-	-	1 grain
	Pilulæ hydrargyri	-	-	-	-	2 grains
	Fiat pilula.					

It is interesting to note the more recent revival in the use of digitalis leaf as a mode of administration of the drug in an active form.

Two syrups are quoted, both fairly successful efforts to disguise particularly unpleasantly tasting drugs. *Syrupus cascariæ compositus* consists of equal parts of liquid extract of cascara and syrup of ginger. *Syrupus chloretone* is as follows :—

R	Chlorbutol	-	-	-	-	5 grains
	Saccharini	-	-	-	-	$\frac{1}{2}$ grain
	Tincturæ aurantii	-	-	-	-	30 minims
	Glycerinum ad	-	-	-	-	60 minims

This is mainly used in St. George's for the treatment of chorea in children, one drachm doses being administered four- or six-hourly until the child is drowsy, and then the dose is gradually diminished.

Of the prescriptions used for children one might



quote the following, *Haustus ricini*, used for diarrhoea :

R	<i>Spiritus chloroformi</i>	-	-	-	-	2 minims
	<i>Potassii carbonatis</i>	-	-	-	-	$\frac{1}{2}$ grain
	<i>Olei ricini</i>	-	-	-	-	5 minims
	<i>Mucilaginis acaciæ</i>	-	-	-	-	15 minims
	<i>Syrupi</i>	-	-	-	-	15 minims
	<i>Aquam anethi ad</i>	-	-	-	-	60 minims

For the treatment of round worm the *Pulvis santonini compositus* is provided :—

R	<i>Santonini</i>	-	-	-	-	$\frac{1}{2}$ grain
	<i>Pulveris scammonia compositi</i>	-	-	-	-	$\frac{1}{2}$ grain
	<i>Hydrargyri subchloridi</i>	-	-	-	-	$\frac{1}{4}$ grain
	<i>Saccharum lactis ad</i>	-	-	-	-	2 grains

(For every year of child's age.) To be followed by a saline aperient next morning.

Preparations of value to surgeons includes one of historical interest and undoubted efficacy—*Unguentum viride*, which is used to promote granulation and for the treatment of bed-sores. It is gently warmed to soften and is spread on lint before application :—

R	<i>Gummi elemi</i>	-	-	-	-	90 grains
	<i>Sevi præparati</i>	-	-	-	-	210 grains
	<i>Olei olivæ</i>	-	-	-	-	20 minims
	<i>Olei terebinthinæ</i>	-	-	-	-	40 minims
	<i>Copaibæ</i>	-	-	-	-	60 grains
	<i>Unguentum sambuci viridis ad</i>	-	-	-	-	1 ounce

In 1927 the *oleum lubricans* used for oiling catheters and which contained castor oil, almond oil and carbolic acid was omitted as it was found not to remain sterile, and the following was substituted :—

R	<i>Thymolis</i>	-	-	-	-	1 part
	<i>Paraffinum liquidum ad</i>	-	-	-	-	3000 parts

For the historical notes I am indebted to Dr. J. Blomfield's " *St. George's, 1733-1933.*" London, 1933.

## VII

# THE PHARMACOPŒIA OF ST. MARY'S HOSPITAL

By C. M. WILSON, M.D., F.R.C.P.

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ON the title page of the first edition of the London Pharmacopœia published in May, 1618, there is a unicorn in an arbour of thistles and roses, but in another edition printed in December of the same year the place of the unicorn and the thistles is taken by the figure of Galen in Tudor robes. Three centuries have gone and the Pharmacopœia has shed gradually and rather reluctantly its more picturesque features, swallows and water lilies, oil of ants and oils of puppy-dogs, crabs' eyes and foxes' lungs, vipers and worms and woodlice, but never since the time of the thistles has food for donkeys been altogether wanting. It would be invidious to illustrate this statement: I need only record that it required a world war to bring about the substitution of the thin comfort of glucose and saline for the rectal banquets which until then had graced the Pharmacopœia of my own hospital.

“Every hospital pharmacopœia contains ancient and even antiquated formulæ at which the junior out-patient physician may be inclined to scoff. Yet old-fashioned remedies continue to be the hope, stay and comfort of many a grateful patient.” I do not doubt the reality of the solace. I only question whether this function, legitimate in itself, is not usurping more important duties in the pharmacopœia of a hospital with an educational mission, and more generally whether this pre-occupation with placebos is not destroying the critical faculty of those who use them. Such doubts

find an echo in the able article which Dr. Micks sent from Dublin (p. 136). He pointed out that in prescribing potent drugs physicians tend to use less and less the stock mixtures of their hospital formulary and order instead the active principle uncombined. "A survey," he writes, "of the list of drugs purchased during the year shows that more and more surely the hospital pharmacopœia is becoming the students' guide to the composition of tonics, cooling draughts, bitter mixtures, in fact the great mass of harmless but none the less necessary placebos." He is concerned with the mixture of "the wine of science and the soda water of superstition" and can only hope that the modern student learns from his hospital pharmacopœia to distinguish between the active drugs and the shams. The explanation of this state of affairs is not far to seek. It is not new. In the Pharmacopœia of 1788 we read, that prescriptions, innocent in themselves, were retained out of tenderness to the feelings of some contemporaries. That kindly sentiment has apparently always been at work and as far back as 1721 the authors of the Pharmacopœia confessed that the work was a compromise. Perhaps it still is.

The remedy is sufficiently plain. On page 133 Professor R. H. Micks of Dublin points out that in most hospital pharmacopœias students are encouraged in administering narcotics to observe the effects of single drugs, and not to rely on a blunderbuss mixture. There is no reason why that salutary admonition should be restricted to narcotics. The educational gain would be considerable, the therapeutic loss negligible. In default of some such act of renunciation on our part it would appear that the public, or at any rate a section of it, will be weaned from their bottle of medicine as a placebo before their medical advisers

have seen the light.

There is nothing frivolous about the therapeutic art and the authors of the series to which this article belongs, aware of the solidity of the fare they have to offer, have tried to sharpen the reader's appetite by borrowing condiments from the history of therapeutics, or by attaching a prescription to some legendary figure of the past, but when with varying ingenuity the evil day has been put off, they have all come at last to the humdrum business of tabulating those formulas in their pharmacopœias which have proved most popular, least ephemeral. It is not a very convincing criterion and for my part I set about the task as if I had been asked to compile a list of the hundred best books.

Every prescription is an experiment and it would appear not unduly exacting to expect that an acute clinician at the end of his life would be able to compress his experience of drugs into some useful formulas. But in point of fact the attempt to associate the names of famous physicians with certain prescriptions has been attended with somewhat modest results. My own attempt to recover something from the wisdom of the past has been materially assisted by the fact that Mr. Andrews, the head of the Dispensary at St. Mary's, has held that office for forty-four years—what little I have learnt of the apothecary's art I have had from him—and yet in spite of that advantage how little has come down to us. There is a prescription for influenza ascribed to Sir William Broadbent and still in use :—

R	Liquoris quininæ ammoniati	-	-	60 minims
	Liquoris ammonii acetatis diluti	-	-	120 minims
	Sodii nitritis	-	-	1 grain
	Mucilaginis tragacanthi	-	-	60 minims
	Aquam chloroformi	-	-	to 1 fl. ounce

There is, too, an ointment for which Mr. A. J. Pepper was sponsor :—

R	Acidi borici	-	-	-	-	15 grains
	Olei eucalypti	-	-	-	-	15 minims
	Bismuthi subnitratis	-	-	-	-	60 grains
	Zinci oxidi	-	-	-	-	180 grains
	Oleum ricini ad	-	-	-	-	1 ounce

This ointment was held in such esteem in the treatment of bed-sores that no surgical ward would be without its stock pot, and though it is fifty years since it was first prescribed and Pepper himself died the other day full of years, and bed-sores are now less common, his ointment is still in demand.

In persistent vomiting Dr. W. B. Cheadle gave two teaspoonsful of the following mixture preferring the small dose at frequent intervals as more likely to be retained :—

R	Acidi hydrocyanici diluti	-	-	-	2 minims
	Sodii bicarbonatis	-	-	-	6 grains
	Tincturæ opii	-	-	-	3 minims
	Aquam ad	-	-	-	120 minims

Another prescription of his which he gave to anæmic women suffering from constipation has become a stock aperient tablet :—

R	Aloes	-	-	-	2 grains
	Extracti cascariæ sagradæ sicci	-	-	-	2 grains
	Extracti belladonnæ sicci	-	-	-	$\frac{1}{4}$ grain
	Extracti nucis vomicæ sicci	-	-	-	$\frac{1}{4}$ grain
	Pulveris saponis	-	-	-	$\frac{1}{2}$ grain

The parentage of some of the oldest formulæ in the hospital pharmacopœia is unknown.

R	Acidi sulphurici diluti	-	-	-	10 minims
	Tincturæ opii	-	-	-	10 minims
	Spiritus chloroformi	-	-	-	10 minims
	Aquam camphoræ ad	-	-	-	1 ounce.

It was the custom to keep a large bottle of this mixture in the entrance lodge and the porter was allowed to hand out a dose to anyone who chose to

call for a diarrhoea mixture. With the beginning of a new century and the remorseless march of time it was felt that this practice was perhaps unduly democratic and it was allowed to lapse.

### INJECTIONS

In my childhood—it must be nearly forty years ago—I used to watch my father strapping legs so that women with varicose ulcers were able to continue at their work. They came from the farms on the fells from half the county because they could not afford to go to bed, and they had found that when their legs were strapped they could work. The use of sclerosing fluids for varicose veins was not a common practice then, and, indeed, only became so as Dr. Wigley (vide page 186) points out on account of the shortage of men available for the French army in the second year of the war. There is a special clinic at St. Mary's for the treatment of varicose veins resting on the twin practices of strapping and injection of the veins.

R	Zinci oxidi	-	-	-	-	-	30 grains
	Ichthammolis	-	-	-	-	-	9 grains
	Gelatini	-	-	-	-	-	45 grains
	Glycerini	-	-	-	-	-	180 minims
	Aquam	-	-	-	-	-	to 1 ounce

This modification of Unna's paste is liquefied by warming, and into this some plain gauze is dipped and bound round the limb.

The most popular injection is a solution of 5 per cent. sodium morrhuate in 0·5 per cent. phenol; 13,000 c.cm. of this solution were made during 1935. A solution of lithium salicylate 30 per cent. with 1 per cent. tutocaine is also much used, 8,000 c.cm. being required in the same year. The solution must be made up the day before use as there is a reaction between the two salts which after about forty-eight hours causes a

fine precipitate to form.

#### ADMINISTRATION OF IRON

In the 1915 edition of the hospital Pharmacopœia pills were replaced by tablets of which I shall mention only one, the iron tablet or Blaud's pill. This is the form in which massive doses of iron are given in the treatment of certain types of anæmia. If Blaud's pill is dropped into water, the water turns green owing to the formation of ferrous carbonate. The five-grain tablet when the reaction with water is complete yields one grain of ferrous carbonate. It was the practice at St. Mary's to give ten of these tablets three times a day so that 30 grains of ferrous carbonate, or 150 grains of Blaud's pill were given daily. To meet the objection of prescribing ten tablets for one dose the 50 grains of the Blaud's pill were pressed into three capsules taken three times daily. The number of those capsules used every month varies from 5,000 to 10,000.

#### ALCOHOL IN THERAPEUTICS

The consumption of alcohol in the last twenty years has decreased, but my own impression of the decline in its use at St. Mary's is hardly borne out by these figures.

	Port.	Brandy.	Whiskey.
1913 -	10·52 gallons	59·91 gallons	·01 gallons
1935 -	4·265 gallons	40·584 gallons	2·65 gallons.

#### FORMULAS FOR SPECIAL DEPARTMENTS

Of solutions used as nasal douches only one survives:—

R.	Sodii bicarbonatis	-	-	-	-	60 grains
	Boracis	-	-	-	-	60 grains
	Sodii chloridi	-	-	-	-	60 grains
	Sucrosi	-	-	-	-	120 grains

One teaspoonful in  $\frac{1}{2}$  pint of water.

Between six and seven hundredweight of this powder is used in the Ear, Nose, and Throat Department during the year. In the same department the most popular of the olea is:—

R	Unguenti hydrargyri nitratis diluti	-	20 grains
	Mentholis	- - - - -	2 grains
	Olei lavandulæ	- - - - -	5 minims
	Oleum olivæ	- - - - -	to 1 ounce

It is used with or without 1 or 2 per cent. of hydrochloride of cocaine to paint the inside of the nostril, especially of children.

Of many gargles perhaps the one most commonly prescribed is:—

R	Glycerini phenolis	- - - - -	20 minims
	Tincturæ lavandulæ compositæ		
	(B.P. 1914)	- - - - -	10 minims
	Aquam	- - - - -	to 1 fl. ounce

To this 10 grains of chlorate of potassium are often added.

Mouth washes act in three ways:—(1) As deodorising agents, e.g. potassium permanganate and hydrogen peroxide by virtue of their oxidising powers. Their action is transient. (2) By soothing and pleasing the patient, e.g. glycerin, rose water. (3) By acting as a fomentation if used extremely hot and held in the mouth several minutes, for by increasing the blood supply they promote resolution of the inflammatory processes.

In the Eye Department the following hypertonic solution is found useful for corneal ulcers associated with conjunctivitis:—

R	Sodii chloridi	- - - - -	8 grains
	Potassii chloridi	- - - - -	$\frac{1}{2}$ grain
	Dextrosi	- - - - -	1 grain
	Aquam	- - - - -	to 1 ounce

#### APERIENTS

The idea that the colon is a sink from which the body is poisoned is one of those conceptions which



enables a certain type of mind to fill in the gaps in our knowledge of the causation of disease without the bother of research. It is a little unfortunate that the steps taken to eliminate this poison from the colon are precisely those which favour absorption of bacteria from the gut. Incidentally, the practice of prescribing aperients without watching the result is the probable explanation of the failure to get a formed motion. In this connection the effect of giving castor oil to a patient whose urine has just been rendered sterile is instructive.

Whether the use of paraffin as a lubricant interferes with absorption from the gastro-intestinal canal is uncertain, but in practice its vogue varies in a surprising fashion, for whereas Guy's Hospital uses 2,000 gallons yearly, St. Mary's only consumes 330 gallons.

#### ENEMAS

Enema saponis :—

R	Saponis mollis (B.P.)	-	-	-	-	1 ounce
	Aquam	-	-	-	-	to 1 pint

The commercial variety of soft soap is unduly alkaline and is made from any common fat, so that when nurses in preparing this enema used any quality of soap which happened to be at hand enema rash was common. The letters "B.P." were added for the first time in the 1915 edition to indicate that the "B.P." soap must be used and since then the rash has not occurred.

*Diagnosis of partial intestinal obstruction by the double enema.*—A simple enema is given—as above. The nurse stays with the patient because failure to pass flatus is significant. If this enema does not act in one-and-a-half hours, then it is repeated. If there is no result following the second enema there is

probably obstruction. The presence of a considerable amount of mucus is suggestive of obstruction. In doubtful cases half an ounce of liquid paraffin may be given twice daily when the physician would hesitate to order an aperient.

#### PASTES

Of external remedies I shall only mention this paste:—

R. Pulveris tragacanthi	-	-	-	-	20 grains
Alcoholis	-	-	-	-	40 minims
Glycerini	-	-	-	-	20 minims
Acidi benzoici	-	-	-	-	$\frac{1}{2}$ grain
Olei geranii	-	-	-	-	$\frac{1}{4}$ minim
Aquam	-	-	-	-	to 1 ounce

This is a translucent jelly which can be rubbed on the hands when the skin has become cracked or rough after using perchloride or biniodide lotion.

#### THE ADMINISTRATION OF CALCIUM

My practice in regard to calcium is entirely based on the research work and experience of Dr. Donald Hunter. The gist of this seems to be the following. Calcium lactate is used for oral, calcium gluconate for intramuscular, and calcium chloride for intravenous administration. The pharmacopœial doses of calcium salts are hopelessly inadequate. What is required is five grammes three times a day, and not just a few grains. Most patients can take calcium lactate fasting with a glass of milk, although in a few cases it causes dyspeptic symptoms. It is useful for tetany, idiopathic steatorrhœa, osteomalacia, Paget's disease, and lead poisoning. The objection to large doses of calcium chloride is of course the risk of acidosis. In cases of alkalosis tetany, however, this is obviously an advantage and 15 grammes a day of calcium chloride may be given.

For intramuscular treatment the gluconate must be

chosen because the chloride causes necrosis of tissue. Unfortunately the actual percentage of calcium in calcium gluconate is so small that a 10 c.cm. ampoule adds very little calcium to the tissues. I do not mean that it is useless in treatment, but that in emergency cases it may be inadequate. When life has to be saved in post-operative tetany there is no doubt that intravenous calcium chloride must be given. The slow intravenous injection of 15 c.cm. of a 5 per cent. solution of calcium chloride is safe, provided it is given very slowly and not persisted in if tightness in the chest or anginal pain appear. It is important to prevent escape of calcium chloride outside the vein, otherwise painful necrosis may occur.

The problem of absorption is difficult. In normal individuals it seems impossible to raise the blood calcium even by half a milligramme using 15 grammes of calcium lactate a day. In post-operative tetany, however, when the patient has a great need for calcium, the use of the lactate by mouth in large doses may raise the blood calcium figure even as much as from 7 to 10 mg. Another observation of interest is that calcium will do more good in idiopathic steatorrhœa when the patient is on a low fat diet than is the case with a normal or high fat diet.

#### CONCLUSION

In more than one of these articles there has run an undertone of regret that the arts of prescribing and dispensing have been forgotten. I do not share those regrets. The argument is that the craftsman should know his tools. But are they really his tools? The forgotten art seems to have been used to compound a number of drugs among which a specific for the disease in question was wanting. When we possess such a

specific there is no art required in its prescription. For my part I do not want the student to recover the knack of pill making. I only want a great draught from the Physiology Department to blow through the dusty formulas that have come down to us. If our treatment is still too often symptomatic and empirical, if a specific remedy is the exception and not the rule, we are at any rate conscious of the gaps in our knowledge. That a patient's faith in a placebo should exceed its deserts is no doubt inevitable, and even desirable. It is another matter when the physician comes to share that belief. However gradual the process may be, treatment is becoming more rational and specific, the habit of prescribing without a precise purpose in mind is growing less common.

## VIII

# THE PHARMACOPŒIA OF THE WESTMINSTER HOSPITAL

By SIR STANLEY WOODWARK, C.M.G., C.B.E., M.D., F.R.C.P.

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THE earliest reference to a Westminster Hospital Pharmacopœia is found in the minutes of a House Committee meeting held in December, 1721, for the purpose of considering methods for "lessening the cost of medicines and procuring them at best hand." It was decided to draw up a list of medicines, referred to in the minutes as a "pharmacopœia." This list was sent to various apothecaries who were requested to quote prices for the sale of these drugs. No further changes were recorded for more than a century, and the next important landmark in the history of the Pharmacopœia was reached in 1827, when Sir Anthony Carlisle, later president of the Royal College of Surgeons, proposed that the medical officers be requested to deliver to the Board on Wednesday, December 26, a "medical and surgical pharmacopœia nosocomialis." This project, however, was not realized until January, 1828, when the Board, having been notified of the completion of the work, gave permission for its printing.

The term *nosocomium*, meaning a hospital, has persisted in the title of most of the other editions, and is believed to be peculiar to this Pharmacopœia. It is a word of Greek origin which became imported into the Latin, and the adjectival form, *nosocomialis*, does

not appear to have been derived from any classical authority, but was the product of the fertile brain of an early nineteenth-century minute clerk.

In 1839, a further 500 copies of the pharmacopœia were printed, and in 1846 a revised edition was decided upon. In 1876, nine years after the publication of the first British Pharmacopœia, the revision of the hospital pharmacopœia was undertaken under the joint editorship of Dr. (afterwards Sir William) Allchin and Dr. F. de Havilland Hall, and the nomenclature of the official volume was adopted throughout. This is the earliest edition to which access has been possible. A new edition under the same editorship appeared in 1886, following the British Pharmacopœia of 1885. Further revisions were made in 1902 and 1921, in which the metric system was introduced in parallel with the apothecaries system, a further innovation being the addition of a children's formulary.

#### PRESENT EDITION

The present edition was brought out in 1934 under the editorship of the present pharmacist, Mr. F. G. Hobart, and has enabled the pharmacopœia to be brought abreast with modern therapy. The revision has been largely influenced by the British Pharmacopœia of 1932, and its nomenclature has been adopted throughout. The presentation of doses in the metric system has been discarded, as it was felt that it had not so far proved an acceptable medium for prescribers. The warning "D.D." has been placed against all preparations coming within the regulations of the Dangerous Drugs Act.

A comparison of the 1876 edition with the present one is interesting not so much on account of the radical changes which have been made, but because of the large

number of formulas which have been retained. Of the 123 prescriptions in the earlier edition, about 75 are still found in the present one and practically unaltered. Several of the original formulas, such as the *Mist. cascarillæ*, the *Mist. copaibæ*, the *Mist. ergotæ acida* and the *Suppositorium acid. tannic. et morphin.* were still present in the 1921 edition and were only discarded in the present one. It is surprising to find that the *Lotio stimulans*, a favourite prescription for the growth of hair, although mentioned in the 1876 *pharmacopœia*, was omitted from all later editions.

It is possible that emetics were more popular in the nineteenth century than nowadays, since there is among the original prescriptions a *Haust. emeticus* :—

R	<i>Pulv. ipecac.</i>	-	-	-	-	-	10 grains
	<i>Zinci sulph.</i>	-	-	-	-	-	20 grains
	<i>Syrupi</i>	-	-	-	-	-	60 minims
	<i>Aq. menth. virid. ad</i>	-	-	-	-	-	1 fluid ounce

It is difficult to say whether the syrup was added here to make the mixture more palatable or to enhance its emetic qualities.

Despite the many improvements made, a comparison of the various editions shows very little alteration in the practice of flavouring medicines. For example, in the course of revision, *spiritus chloroformi* has been added to one prescription, only to be withdrawn from another. This may be due in part to considerations of expense and to the recognition of the impossibility of adequately disguising the taste of such drugs as quinine. It must, however, be admitted that many prescriptions, while possibly supporting the aphorism of Asclepiades in that they should cure quickly and safely, seem to fall short of his third dictum that they should do so pleasantly.

Before passing on to a consideration of some of the more popular prescriptions in the present edition, it

should be pointed out that this article must necessarily contain a few formulæ which may resemble some of those already given, but it may be pleaded in extenuation that their very popularity should permit of their emphasis by repetition.

#### POPULAR PRESCRIPTIONS

*Baths.*—There has been a reduction in the number of formulæ in this section, and the effervescent and acid baths (the latter containing hydrochloric and nitric acids) despite their stimulating titles, have disappeared. The mustard bath (*Balneum sinapis*), old-fashioned perhaps, but by no means to be despised as a stimulant to the collapsed baby, is described with full directions for making it:—

R Powdered mustard of commerce—1 ounce per 2½ gallons water. (The mustard should be mixed to a thin smooth paste with cold water before adding to the bath.)

Incidentally, the amount of mustard to be added is considerably higher than is recommended by the manufacturers on their tins.

*Chartæ* (medicated papers).—The liability of these to set up irritation and aggravate bronchitis has greatly diminished their popularity with practitioners in the treatment of asthma. Nevertheless, the *Pharmacopœia* contains a number of them, including the *Charta potassii nitratis* and the *Charta stramonii*. They are made by soaking pieces of white blotting paper in a solution of potassium nitrate (45 grains in one ounce of water) and may be sprinkled when dry with *tinct. stramonii*, 15 minims.

*Collunaria.*—The nasal douche in most constant demand is the ever-popular *Collunarium alkalinum*:—

R	<i>Sodii bicarbonatis</i>	-	}	-	of each	5 grains
	<i>Sodii chloridi</i>	-				
	<i>Boracis</i>	-				
	<i>Sucrosi</i>	-	-	-	-	15 grains

The quantities indicated to be added to one ounce of warm water before use.



*Collutoria (mouth washes).*—These differ in certain respects from similar preparations in other pharmacopœias. A pleasant mouth wash is the Collutorium myrrhæ et boracis :—

R	Potassii chloratis	}	-	-	of each	12 grains
	Boracis					
	Tincturæ myrrhæ	-	-	-	-	10 minims
	Glycerini	-	-	-	-	30 minims
	Aquam menthæ piperitæ ad	-	-	-	-	1 fluid ounce

To be diluted with an equal part of warm water before use.

A very useful prescription for dental cases is the Collutorium phenolis cum iodo :—

R	Liquoris iodi fortis	-	-	-	-	10 minims
	Phenolis liquefacti	-	-	-	-	4 minims
	Liquoris potassii hydroxidi	-	-	-	-	5 minims
	Liquoris carmini	-	-	-	-	3 minims
	Glycerini	-	-	-	-	30 minims
	Aquam ad	-	-	-	-	1 fluid ounce

*Emulsions.*—These include the Emulsio paraffini et agar (containing half its volume of liquid paraffin) and the Emulsio paraffini et agar cum phenolphthaleino (each fluid drachm containing one grain of phenolphthalein). There are also the Emulsio olei morrhuæ and the Emulsio olei morrhuæ cum ferro, each drachm of the latter containing ferri et ammonii citratis  $2\frac{1}{2}$  grains.

*Enemas.*—The majority of these remain unaltered from the earlier editions. Two recent additions are the ox bile and the sodium chloride enemas. The former, used particularly in the surgical wards in cases of intestinal obstruction and post-operative ileus, has the following formula :—

R	Extracti fellis bovini	-	-	-	-	60 minims
	Olei terebinthinæ	-	-	-	-	240 minims
	Glycerini	-	-	-	-	240 minims
	Enema saponis ad	-	-	-	-	1 pint

Sodium chloride and infusum quassia, so often used independently in the treatment of thread-worms, are

combined in the sodium chloride enema :—

R	Sodii chloridi	-	-	-	-	1 ounce
	Infusum quassiae recentem ad	-	-	-	-	1 pint

The term *haustus* is only used in the formulary for those mixtures which are to be dispensed as a single draught of one ounce. They include the *Haust. potassii bromidi et chloralis*, the *Haust. filicis* and the *Haust. paraldehydi*. In the two latter prescriptions the problem of disguising the nauseating flavour of the principal drugs has been achieved with some degree of success :—

R	Extracti filicis	-	-	-	-	60 minims
	Syrupi zingiberis	-	-	-	-	30 minims
	Mucilaginis acaciae	-	-	-	-	120 minims
	Aquam menthae piperitae ad	-	-	-	-	1 fluid ounce
R	Paraldehydi	-	-	-	-	120 minims
	Syrupi aurantii	-	-	-	-	60 minims
	Extracti glycyrrhizae liquidi	-	-	-	-	30 minims
	Mucilaginis acaciae	-	-	-	-	120 minims
	Aquam anisi ad	-	-	-	-	1 fluid ounce

*Linctus*.—Apart from the commonly used Gee's linctus (known in this pharmacopœia as the *Linctus scillae et tolu*), the *Linctus codeinae compositus* and the *Linctus diamorphinae* also enjoy a wide measure of popularity. The two last are respectively as follows :—

R	Syrupi codeinae	-	}	-	-	of each	10 minims
	Syrupi scillae	-					
	Syrupi tolutani	-					
	Mucilaginem acaciae ad	-	-	-	-	-	60 minims

The amount of codeine in the above is so small as to render it effective in repressing only a mild cough. When the cough is very distressing the *Linctus diamorphinae* will be found to be more effective :—

R	Diamorphinae hydrochloridi	-	-	-	-	1/20 grains
	Olei pini	-	-	-	-	1/32 minims
	Glycerini	-	-	-	-	30 minims
	Syrupum pruni serotinae ad	-	-	-	-	60 minims

*Liniments.*—When originally a vegetable oil was combined with an alkali to form an emulsion, the device in the 1934 B.P.C. of using a mineral oil and a definite proportion of oleic acid, has now been adopted to prevent progressive thickening of the emulsion. This may be illustrated by the composition of Lin. calaminæ :—

R	Calaminæ	-	-	-	-	30 grains
	Zinci oxidi	-	-	-	-	30 grains
	Adipis lanæ	-	-	-	-	4 grains
	Acidi oleici	-	-	-	-	3 minims
	Paraffini liquidi	-	-	-	-	240 minims
	Liquorem calcii hydroxidi ad	-	-	-	-	1 fluid ounce

*Lotions.*—The popular Lotio hydrargyri et resorcini, so efficacious in the treatment of seborrhœa of the scalp, contains a larger amount of resorcin in the Westminster Hospital formula than in a similar preparation described by Dr. Wigley (*see* page 188).

R	Resorcini	-	-	-	-	12 grains
	Hydrargyri perchloridi	-	-	-	-	$\frac{1}{2}$ grain
	Ætheris	}	-	-	of each	12 minims
	Olei ricini					
	Spiritus methyлатum industrialem ad	-	-	-	-	1 fluid ounce

#### MIXTURES

These cover the usual wide range, and space will only permit of a few of the principal ones being considered. Pride of place must be given to Basham's mixture. Dr. W. R. Basham was physician to the Hospital, 1843–77, but the prescription associated with his name, Mist. ferri acetatis, was not incorporated into the pharmacopœia until 1902. It has been officially included in the United States Pharmacopœia as the Liquor ferri et ammon. acetatis :—

R	Liquoris ferri perchloridi	-	-	-	15 minims
	Liquoris ammonii acetatis	-	-	-	120 minims
	Acidi aceti diluti	-	-	-	15 minims
	Glycerini	-	-	-	15 minims
	Aquam ad	-	-	-	$\frac{1}{2}$ ounce

The mixture which is intended as a combined diuretic and hæmatinic in cases of chronic parenchymatous nephritis is not very often prescribed nowadays. Although there has been no increase in the strength of the various iron mixtures in the present edition, and half an ounce of the *Mist. ferri citratis* still contains *ferri et ammon. citratis* 10 grains, in actual practice much larger doses are frequently prescribed in conformity with modern therapeutics. Since the appearance of the present issue of the pharmacopœia, a new iron preparation, to which the name "ferrodic" has been given, was devised and first produced in the pharmaceutical department of Westminster Hospital, and is now manufactured under licence by Messrs. Allen and Hanburys. The iron is administered in the form of chocolated granules of colloidal ferrous phosphate stabilized by dextrose, the latter retarding oxidation and maintaining the iron in a ferrous form. The potency of the preparation (60 grains of the granules being equivalent to two 5-grain Blaud's pills) has received extensive trial in the children's department, where its palatable flavour makes it a popular remedy. This may be judged by the fact that about half a hundredweight of the granules is used per month.

It will be found that the ills of the alimentary tract are well catered for. Even in these days no mixtures are more frequently prescribed than the *Mist. gentianæ alkalina* or the *Mist. gentianæ et rhei*, not only for cases of dyspepsia and anorexia, but it might almost be added for the whole range of ill-defined ailments which form the stock in trade of the general outpatient department. These harmless placebos also lend themselves to the addition of potassium bromide for those innumerable patients requiring a nervous sedative, or to the addition of *tinct. nucis vomicæ* for

those others who need cheering up. These preparations are surprisingly omitted from the 1886 edition, although they appear in former and subsequent editions.

Important additions have been necessitated by the modern intensive alkaline treatment of peptic ulcer. The following three prescriptions have been included in the 1934 formulary. These are the *Mist. kaolini*, the *Mist. kaolini composita* and the *Mist. magnesii carbonatis composita* :—

R	Kaolini	-	-	-	-	60 grains
	Sodii bicarbonatis	-	-	-	-	10 grains
	Aquam menthæ piperitæ ad	-	-	-	-	$\frac{1}{2}$ ounce
R	Kaolini	-	-	-	-	40 grains
	Sodii bicarbonatis	-	-	-	} of each	20 grains
	Magnesii carbonatis ponderosi	-	-	-		
	Aquam chloroformi ad	-	-	-	-	$\frac{1}{2}$ ounce
R	Sodii bicarbonatis	-	-	-	} of each	15 grains
	Magnesii carbonatis ponderosi	-	-	-		
	Calcii carbonatis	-	-	-	-	30 grains
	Aquam ad	-	-	-	-	$\frac{1}{2}$ ounce

In addition to the *Mist. bismuthi*, there is also the *Mist. bismuthi et acidi hydrocyanici*, which retains its popularity for the relief of vomiting :—

R	Liquoris bismuthi	-	-	-	15 minims
	Acidi hydrocyanici diluti	-	-	-	3 minims
	Aquam chloroformi ad	-	-	-	$\frac{1}{2}$ oz.

The *Mistura carminativa* of our pharmacopœia has undergone slight modification in the present edition and now has the following formula :—

R	Pulveris rhei	-	-	} of each	2 grains
	Pulveris zingiberis	-	-		
	Ammonii carbonatis	-	-	-	3 grains
	Sodii bicarbonatis	-	-	-	10 grains
	Aquam cinnamoni ad	-	-	-	$\frac{1}{2}$ ounce

The aperient mixtures call for no special comment, except that apart from their occasional administration, they are prescribed with less frequency and enthusiasm

than formerly. In all the liquid preparations of cascara, the official Elixir cascarae sagradae is used on account of the nauseating taste of the liquid extract:—

R	Elixir cascarae sagradae	-	-	-	60 minims
	Aquam chloroformi ad	-	-	-	$\frac{1}{2}$ ounce

The tendency of ergot and digitalis to undergo decomposition with loss of potency when prescribed in mixtures, has resulted in the removal of all mixtures containing these drugs, with the exception of the Mist. ferri et digitalis. Ergot is prescribed either as tablets containing ergota præparata 5 grains, or as the liquid extract. A suitable method of prescribing digitalis, particularly to out-patients, is in the form of tablets containing digitalis pulverata 1 grain (equivalent to 10 minims of the tincture).

The chief characteristic of the expectorant mixtures is the simplicity of their composition. This is exemplified in the Mist. ammoniæ et senegæ, which has the following formula :—

R	Ammonii carbonatis	-	-	-	5 grains
	Spiritus chloroformi	-	-	-	5 minims
	Infusum senegæ ad	-	-	-	$\frac{1}{2}$ ounce

When it is desired to prescribe potassium iodide as an expectorant, there is the Mist. potassii iodidi ammoniata :—

R	Ammonii carbonatis	-	-	-	5 grains
	Ammonii chloridi	-	-	-	10 grains
	Potassii iodidi	-	-	-	5 grains
	Extracti glycyrrhizæ liquidum	-	-	-	30 minims
	Aquam anisi ad	-	-	-	$\frac{1}{2}$ ounce

A suitable antispasmodic mixture for asthma is the Mist. stramonii composita, identical in composition to that described in previous articles of the series. Tinct. lobeliae ætherea is frequently added to this mixture and certainly appears to enhance its antispasmodic action.

To meet the requirements of those who wish to prescribe aspirin in a mixture, there are the Mist. acidi

acetylsalicylici and the Mist. acidi acetylsalicylici composita (Morgan's mixture):—

R	Acidi acetylsalicylici	-	-	-	10 grains
	Mucilaginis tragacanthæ	-	-	-	30 minims
	Aquam chloroformi ad	-	-	-	$\frac{1}{2}$ ounce
R	Acidi acetylsalicylici	-	-	-	5 grains
	Caffeinæ citratis	-	-	-	2 grains
	Potassii citratis	-	-	-	20 grains
	Tincturæ opii camphoratae	-	-	-	15 minims
	Extracti glycyrrhizæ liquidi	-	-	-	15 minims
	Aquam chloroformi ad	-	-	-	$\frac{1}{2}$ ounce

In practice the aspirin is given separately in tablets when the latter mixture is ordered, as it rapidly decomposes in solution with potassium citrate.

No pharmacopœia would be complete without its valerian mixtures. An excellent example in the formulary is the Mist. valerianæ et potassii bromidi composita :—

R	Potassii bromidi	-	-	-	-	10 grains
	Sodii bicarbonatis	-	-	-	-	10 grains
	Tincturæ valerianæ ammoniatæ	-	-	-	} of each	15 minims
	Spiritus chloroformi	-	-	-		
	Syrupi zingiberis	-	-	-		
	Infusum gentianæ compositum ad	-	-	-	-	$\frac{1}{2}$ ounce

Whilst it cannot be claimed that this mixture is universally popular with patients, its value in many functional nervous states, particularly when associated with flatulent dyspepsia, is undoubted. In fact, there are patients who refuse to be deprived of the mixture, and this cannot be attributed solely to the implicit faith placed by them in nauseous and therefore supposedly potent remedies.

The various quinine mixtures are not very often prescribed now, although the Mist. quininæ et ferri still retains some of its popularity as a tonic. The formula, which differs somewhat from that in other pharmacopœias, is as follows :—

R	Quininæ sulphatis	-	-	-	-	-	1 grain
	Ferri sulphatis	-	-	-	-	-	2 grains
	Acidi sulphurici diluti	-	-	-	-	-	5 minims
	Tincturæ capsici	-	-	-	-	-	2 minims
	Aquam chloroformi ad	-	-	-	-	-	$\frac{1}{2}$ ounce

The ferrous sulphate should be added last in this mixture, when the latter has almost been made up to full volume, to obviate oxidation of the iron.

Another tonic mixture is the Mist. quininæ cum strychnina :—

R	Liquoris strychninæ hydrochloridi	-	-	-	-	3 minims
	Quininæ sulphatis	-	-	-	-	2 grains
	Acidi hydrobromici diluti	-	-	-	-	15 minims
	Aquam chloroformi ad	-	-	-	-	$\frac{1}{2}$ ounce

If larger doses of quinine are required there is the Mist. quininæ fortior, which appears to be an original Westminster Hospital formula, and is prescribed for patients with trigeminal neuralgia :—

R	Quininæ sulphatis	-	-	-	-	5 grains
	Acidi sulphurici diluti	-	-	-	-	5 minims
	Tincturæ gelsemii	-	-	-	-	10 minims
	Spiritus chloroformi	-	-	-	-	15 minims
	Aquam cinnamoni ad	-	-	-	-	$\frac{1}{2}$ ounce

An innovation in the Mist. calcii lactatis is the addition of sodium lactate, as this is believed to increase the absorbability of the calcium :—

R	Calcii lactatis	-	-	-	-	15 grains
	Sodii lactatis	-	-	-	-	5 grains
	Spiritus chloroformi	-	-	-	-	5 minims
	Aquam ad	-	-	-	-	$\frac{1}{2}$ ounce

The Mist. trinitrini (liquoris trinitrini 1 minim, spiritus chloroformi 5 minims, tincturæ capsici 2 minims, aquam menthæ piperitæ ad  $\frac{1}{2}$  ounce), present in former editions, has now been omitted on account of the tendency of the liquor trinitrini to decompose in mixtures, and the Tabella glycerylis trinitratis is usually prescribed instead for cases of angina pectoris. This tablet, made up in a chocolate basis, should be



chewed, as it is suggested that the active principle is absorbed from the mouth.

## OTHER PREPARATIONS

*Nebulæ*.—Paraffinum liquidum leve is used in the preparation of these. In addition to Neb. ephedrinæ et mentholis and Neb. mentholis there is a Neb. chlorbutol composita :—

R	Chlorbutol	-	-	-	-	-	5 grains
	Mentholis	-	-	-	-	-	10 grains
	Camphoræ	-	-	-	-	-	10 grains
	Olei cinnamoni	-	-	-	-	-	1 minim
	Paraffinum liquidum leve ad	-	-	-	-	-	1 fluid ounce

*Pigmenta (Paints)*.—Pigmentum iodi compositum (Mandl's paint) still remains the favourite local application for cases of acute tonsillitis. Owing to the tendency of the oleum menthæ piperitæ to separate out, it was decided to reduce the amount of this in the Westminster formula as compared with that in the B.P.C. It will also be noticed that the prescription contains more potassium iodide :—

R	Iodi	-	-	-	-	-	5 grains
	Potassii iodidi	-	-	-	-	-	20 grains
	Aquæ destillatæ	-	-	-	-	-	20 minims
	Olei menthæ piperitæ	-	-	-	-	-	1 minim
	Glycerinum ad	-	-	-	-	-	1 fluid ounce

A useful application to small flat warts of the skin is the Pigmentum hydrargyri perchloridi compositum :—

R	Hydrargyri perchloridi	-	-	-	-	-	4 grains
	Acidi salicylici	-	-	-	-	-	60 grains
	Spiritus methylatum industrialem ad	-	-	-	-	-	1 fluid ounce

*Pulveres*.—Apart from several dusting powders, two are intended for internal administration. Pulv. barbitoni compositus, which is also made up in tablet form, has the following formula :—

R	Barbitoni	-	-	-	-	-	1 grain
	Amidopyrinæ	-	-	-	-	-	2 grains

This preparation is identical with veramon. The dangers of amidopyrine poisoning with resulting agranulocytosis will certainly diminish its repeated administration. Pulv. effervescens is frequently used with a view to increasing the alkali reserve in such conditions as migraine :—

R	Sodii bicarbonatis	- }	-	-	of each	30 grains
	Acidi tartarici	- }				

*Suppositories.*—There are three of these in the pharmacopœia, the Suppositorium acidi tannici et belladonnæ, the Suppositorium belladonnæ, and the Suppositorium hamamelidis compositum. The formula of the last is as follows :—

R	Hamamelini	- }	-	-	of each	1 grain
	Ferri sulphatis	- }				
	Acidi tannici	-	-	-	-	3 grains
	Olei theobromatis	-	-	-	-	q.s.

The prescription appears to be a Westminster Hospital one. The combination of two ingredients, ordinarily incompatible, such as iron and tannic acid, is rendered possible by the absence of moisture.

The *tablets*, which include many preparations previously made up as pills, call for no special comment, except that the Tab. butyl-chloralis et gelseminæ is popular with some as a sedative for neuralgia :—

R	Butyl-chloralis hydratis	-	-	-	3 grains
	Gelseminæ hydrochloridi	-	-	-	1/200 grains

*Ointments.*—A valuable ointment for lupus vulgaris is the Ung. acidi pyrogallici compositum :—

R	Acidi pyrogallici	-	-	-	20 grains
	Ichthammolis	-	-	-	30 grains
	Acidi salicylici	-	-	-	15 grains
	Paraffinum molle ad	-	-	-	1 ounce

Ung. chrysarobini compositum closely resembles the B.P.C. formula and is frequently used in the treatment of psoriasis :—

R	Chrysarobini	-	-	-	-	-	20 grains
	Acidi salicylici	-	-	-	-	-	8 grains
	Ichthammolis	-	-	-	-	-	60 grains
	Paraffinum molle ad	-	-	-	-	-	1 ounce

*Vapores (Inhalations).*—These are made up so that a teaspoonful of the liquid is added to a pint of hot water. A useful inhalation in cases of acute laryngitis or bronchitis is the Vapor benzoini compositus :—

R	Olei pini	-	}	-	-	-	of each	10 minims
	Eucalyptolis	-						
	Tincturam benzoini compositam ad	-	-	-	-	-	-	1 fluid ounce

In conclusion, it will be noted that throughout the pharmacopœia stress is laid upon the importance of the medical student learning as far as possible to prescribe those remedies of which he knows the composition as well as therapeutic action. It is for this reason that he should not be and is not taught in the early stages of his clinical training to use complex proprietary compounds, the exact nature of which is frequently forgotten by or unknown to the prescriber. It is true that many proprietary preparations are more elegant than the corresponding ones in the hospital pharmacopœias, but the latter must remain the basis of clinical teaching. After all a hospital formulary does embody those prescriptions which have survived the test of time, while also reflecting the progress of modern therapy. In this respect it is not claimed that the Westminster Hospital Pharmacopœia is in any sense superior to those of other hospitals, but it is ventured to suggest that it is not only up-to-date, but typical and a good example of those in use in modern hospitals.

## IX

# THE PHARMACOPŒIA OF CHARING CROSS HOSPITAL

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AT its foundation, Charing Cross Hospital was established with the dual purpose of treating the sick poor and of educating medical students—the only hospital in London which started *ab initio* with this object. In 1935, its centenary year, the new edition of the Pharmacopœia was designed to keep these objects simultaneously in view. From the patient's standpoint, the prescriptions which have been found by long usage to be the best are incorporated, while the student will find for ready reference all the preparations of the British Pharmacopœia with their doses. At the same time it has been designed as a vade mecum for house officers and other newly-qualified medical practitioners who are called upon to write prescriptions perhaps for the first time or to know the uses of many drugs which may not be incorporated in the B.P. or the B.P.C. This alone may be sufficient reason for including such drugs as nepenthe, a favourite anodyne (B.P. 1914) still often prescribed on the third or fourth day after operations, and much more pleasant to taste and rather less powerful than the official tincture of opium as it contains 0·84 per cent. of anhydrous morphine. As an illustration of an unofficial recently-introduced drug, salyrgan may be mentioned, for it is a powerful diuretic, especially when given intravenously in doses of  $\frac{1}{2}$ –2 c.cm. combined with full doses of ammonium chloride

(1 to 3 grammes three times a day by mouth).

### MIXTURES

In any pharmacopœia of a general hospital, mixtures often take pride of place as being most in demand. It may at first sight seem strange to have aspirin dispensed in a mixture (*Mistura acidi acetylsalicylici*) :—

R	Acetylsalicylic acid	-	-	-	-	10 grains
	Mucilage of tragacanth	-	-	-	-	60 minims
	Chloroform water	-	-	-	-	to 1 fl. oz.

There is good reason for this: about 10 tons of aspirin are consumed in the United Kingdom each year, and many persons swallow the usual tablet whole and complain of indigestion afterwards—readily accounted for by the insoluble nature of the drug. In addition, a placebo of this type is most valuable for a day or so in a case of obscure pyrexia. A combination of anti-rheumatic drugs is met in the popular prescription labelled *Mistura arthritica* :—

R	Potassium iodide	-	-	-	-	5 grains
	Sodium salicylate	-	-	-	-	5 grains
	Sodium bicarbonate	-	-	-	-	5 grains
	Guaiacol carbonate	-	-	-	-	5 grains
	Mucilage of tragacanth	-	-	-	-	60 minims
	Chloroform water	-	-	-	-	to 1 fl. oz.

This mixture is useful in so far as it tends to relieve pain, and at the same time is safe, even when often repeated—a point of especial importance in dealing with such an obstinate condition. *Cascara sagrada* is universally a popular remedy as an aperient, and the liquid extract is so bitter that it acts as a stomachic at the same time. These properties are enhanced by the addition of *nux vomica*, which tends to reinforce the action of the muscular coat of the intestine, while *belladonna* relieves griping. In combination these drugs therefore act as a powerful stimulant to digestion

and as a useful preparation in constipation. To mitigate the extreme bitterness, spirits of sal volatile and the liquid extract of liquorice are added, with a resultant mixture (*Mistura cascarae sagradae composita*) :—

R	Liquid extract of cascara sagrada	-	-	40 minims
	Tincture of belladonna	-	-	5 minims
	Tincture of nux vomica	-	-	10 minims
	Aromatic spirit of ammonia	-	-	20 minims
	Liquid extract of liquorice	-	-	30 minims
	Chloroform water	-	-	to 1 fl. oz.

A recent addition which has proved popular is *Mistura influenzae* :—

R	Sodium salicylate	-	-	15 grains
	Ammoniated solution of quinine	-	-	60 minims
	Dilute solution of ammonium acetate	-	-	240 minims
	Liquid extract of liquorice	-	-	20 minims
	Mucilage of tragacanth	-	-	60 minims
	Cinnamon water	-	-	to 1 fl. oz.

In this is to be found a combination of drugs which tends to relieve the muscular pains of influenza and stimulates the action of the skin; at the same time the quinine and cinnamon have a well-deserved reputation for treatment of the catarrhal symptoms, and the liquorice not only more than counterbalances the astringent effects of the cinnamon, but is a covering agent to minimize the unpleasant taste.

The most popular of the four expectorant mixtures has proved to be *Mistura ipecacuanhae composita*, which has been almost unaltered over a period of at least thirty-five years :—

R	Tincture of ipecacuanha	-	-	7½ minims
	Ammonium carbonate	-	-	2 grains
	Sodium bicarbonate	-	-	15 grains
	Camphorated tincture of opium	-	-	15 minims
	Chloroform water	-	-	to 1 fl. oz.

This mixture is a mild stimulating expectorant, the virtues of which are sufficiently evident without enumeration.

*Mistura magnesi et belladonnae* (*Mistura gastrica*)

combines the antacid properties of magnesium carbonate, bismuth carbonate and sodium citrate, with the astringent properties of bismuth salts, and at the same time the magnesium carbonate prevents constipation. Tincture of belladonna is added to diminish gastric secretion, the resulting mixture being :—

R	Light magnesium carbonate	-	-	-	10 grains
	Bismuth carbonate	-	-	-	10 grains
	Tincture of belladonna	-	-	-	7½ minims
	Sodium citrate	-	-	-	15 grains
	Peppermint water	-	-	-	to 1 fl. oz.

This mixture is popular for cases of hyperacidity and of peptic ulcer. There is no risk of alkalosis with this mixture, and the sodium citrate dispenses with the need of separately citrating the milk feeds. It is prescribed in doses of 1 fl. oz. three or four times daily, the last dose often being increased to 1½ or 2 fl. oz. at bed time in order to prevent the accumulation of acid in the stomach during the hours of sleep.

*Linctus*.—Dr. Fenton originally introduced Linctus anisi, as an adaptation in linctus form of the Brompton lozenge (liquorice and aniseed) :—

R	Oil of aniseed	-	-	-	1 minim
	Chloroform	-	-	-	1 minim
	Vinegar of squill	-	-	-	10 minims
	Liquid extract of liquorice	-	-	-	10 minims
	Mucilage of tragacanth to	-	-	-	60 minims

This simple linctus is still the favourite, for not only does it sooth the pharyngeal and bronchial mucous membrane, but it has a mildly expectorant action at the same time.

#### PILLS AND POWDERS

*Pills*.—Among the pills, four are worthy of mention. Pilula aloes composita has been in popular use for twenty years.

R	Aloes	-	-	-	1½ grains
	Exsiccated ferrous sulphate	-	-	-	1 grain
	Dry extract of belladonna	-	-	-	⅓ grain
	Dry extract of nux vomica	-	-	-	¼ grain

It is especially useful in the subjects of chronic constipation with secondary anæmia and may, with advantage, be taken regularly for several weeks. The bitter principle of aloes combines aperient and stomachic properties, and to relieve the spasmodic action on the intestine and yet enhance muscular activity, the belladonna and nux vomica are added. *Pilula cascarae sagradæ composita* :—

R	Dry extract of cascara sagrada	-	-	2½ grains
	Dry extract of belladonna	-	-	¼ grain
	Dry extract of nux vomica	-	-	¼ grain
	Liquid glucose	-	-	q.s.

has a similar action, but the ferrous sulphate is omitted as this pill is more powerful and rapid in action than the previous one, and is only prescribed in occasional doses when required.

*Pilula hydrargyri subchloridi et colocynthidis*—

R	Calomel	-	-	-	-	2 grains
	Compound extract of colocynth	-	-	-	-	3 grains

is much more powerful than either of those above-mentioned, but as a powerful hydragogue purgative that causes little griping it can be strongly recommended.

The fourth pill is *Pilula codeinæ et belladonnæ*.

R	Codeine phosphate	-	-	-	-	½ grain
	Dry extract of belladonna	-	-	-	-	¼ grain
	Kaolin	-	-	-	-	2½ grains
	Hard soap to	-	-	-	-	4 grains

In this are combined two drugs with a marked anti-spasmodic action, and with the power of relieving pain originating in plain muscle. To obtain a full effect, this pill should be taken regularly over a period of weeks and it is designed for administration particularly in cases of painful colospasm.

*Powders*.—One of the most useful powders is that for the first-aid treatment of burns and scalds, as recommended by Davidson. To lessen the develop-



ment of sepsis under the hardened surface, acriflavine is added. This tannic acid powder with acriflavine has the composition—

R.	Tannic acid	-	-	-	-	-	30 grains
	Acriflavine	-	-	-	-	-	1½ grains
	Warm sterile water to	-	-	-	-	-	3½ fl. oz.

This forms a 2 per cent. solution of tannic acid. This powder should have a place in the equipment of every practitioner, as the pharmacopœial instructions “to be dissolved immediately before use, and applied with a sterile brush, or on gauze soaked in the solution, or in a spray” are easily carried out.

For use in the out-patient “gastric clinic” as well as for routine use in the wards in the treatment of peptic ulcers, the gastric powders A, B and C have been devised. These possess the advantage that their bulk is small in contrast to gastric mixtures. The three powders are :—

- A. Chalk.
- B. Chalk—3 parts.  
Magnesium hydroxide—1 part.
- C. Chalk—1 part.  
Magnesium hydroxide—1 part.

Dose 60 grains.

These powders are safe when given in doses larger than those recommended officially, and can be varied from time to time in order to make them more aperient, by passing from A to B, or from B to C.

#### LIQUORS AND INJECTIONS

*Liquors.*—In the treatment of iron-deficiency anæmia, large doses of iron and ammonium citrate have recently found their way into a number of pharmacopœias. The difficulty of prescribing it in mixture form with a more or less set dose is met by the liquor ferri et ammonii citratis, which is a 50 per cent. solution in water. The initial dose recommended is thirty minims three times

a day in milk after meals, and this can be increased by two minims daily up to sixty to eighty minims three times a day, or until the limit of tolerance is reached in each individual case. Where the gastric tolerance is very low, the *Mistura ferri et ammonii citratis* may be prescribed.

R	Iron and ammonium citrate	-	-	-	15 grains
	Aromatic spirit of ammonia	-	-	-	15 minims
	Emulsion of chloroform	-	-	-	10 minims
	Compound infusion of gentian	-	-	-	to 1 fl. oz.

Herein the carminative effects of the ingredients go a long way to mitigate the unpleasant digestive sequelæ, especially when taken after meals.

For blood transfusion, *liquor sodii citratis fortis*, which contains 1 gramme of sodium citrate in 4 c.cm. of sterile water is most useful. In the place of the weaker 2·5 and 3·8 per cent. solutions which have been in common use for years, this stronger solution does not dilute the transfused blood. In many severe anæmic conditions the less the volume of fluid transfused the better, and with this strong solution of sodium citrate used as an anti-coagulant, it is not only much more portable in a sterile phial, but 4 c.cm. are sufficient to prevent the coagulation of at least 15 oz. of blood.

*Injections.*—For the treatment of hæmorrhoids there is a choice of two formulæ. *Injectio phenolis* is a 20 per cent. solution of liquefied phenol in equal parts of glycerin and distilled water. It is now becoming much more the custom to inject a weaker solution into the submucous tissues as a perivenous injection rather than to use an intravenous hæmorrhoidal injection. This has given rise to the use of *Injectio phenolis et olei amygdalæ* :—

R	Phenol	-	-	-	-	-	20 grains
	Menthol	-	-	-	-	-	1 grain
	Almond oil	-	-	-	-	-	to 1 fl. oz.

This represents a solution containing just under 5 per cent. of phenol, with the addition of 0·2 per cent. of menthol as a local anæsthetic, and of this 5 c.cm. can be injected perivascularly around each of not more than two separate hæmorrhoids at one time.

#### CONFECTIONS AND OINTMENTS

*Confections.*—For rectal and anal disorders, a number of “jams” have been evolved at different times. The one in popular use and represented in the present pharmacopœia is rather stronger than the official *Confectio sennæ B.P.*, and is known as *Confectio sennæ composita* :—

R	Powdered jalap	-	-	-	-	-	3 grains
	Senna leaf	-	-	-	-	-	3 grains
	Sublimed sulphur	-	-	-	-	-	3 grains
	Black treacle	-	-	-	-	-	to 60 grains

Dose 60–120 grains.

This easily-remembered formula gives a soft comfortable stool at least once a day, without unpleasant anal irritation and yet is certain in its effects.

*Ointments.*—The majority of the ointments still in use are those adopted years ago as standard preparations at the suggestion of Dr. J. M. H. MacLeod. Unlike those of so many hospitals, they contain relatively few ingredients, but those that are present are carefully selected for their therapeutic values. As an illustration of this for use in cases of seborrhœa of the scalp may be quoted *Unguentum sulphuris et acidi salicylici dilutum*.

R	Sublimed sulphur	-	-	-	-	-	15 grains
	Salicylic acid	-	-	-	-	-	10 grains
	Soft paraffin	-	-	-	-	-	to 1 oz.

This is often followed by an equally simple lotion of Dr. MacLeod's, *Lotio acidi salicylici et olei ricini* :—

R	Salicylic acid	-	-	-	-	-	10 grains
	Castor oil	-	-	-	-	-	20 minims
	Industrial methylated spirit	-	-	-	-	-	to 1 fl. oz.,

which still maintains an antiseptic action but is stimulating to the scalp at the same time.

Among the few new ointments that have appeared, Unguentum benzoini et zinci is well worth attention :

R	Compound tincture of benzoin	-	-	-	-	2 parts
	Boric acid ointment	-	-	-	-	4 parts
	Zinc ointment	-	-	-	-	4 parts
	Olive oil	-	-	-	-	1 part

This was originally introduced by Mr. R. C. B. Ledlie to the writer, who can warmly testify to its value with small ulcers and fissures. The pain these cause is often quite out of proportion to their size, especially with cracked nipples and small anal fissures, and the mental as well as the physical relief occasioned by the incorporation of the compound tincture of benzoin for its anæsthetic effect is as marked as the stimulating effect of the three principal ingredients on the healing process.

## X

# THE PHARMACOPŒIA OF THE ROYAL INFIRMARY OF EDINBURGH

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THE present pharmacopœia of the Edinburgh Royal Infirmary was compiled by Mr. Charles Arthur, chemist to the institution in 1892, but it had numerous predecessors and has gone through four editions since it was first issued. The small volume in its present form embraces the formulæ in general use in the medical, surgical and special departments of the Royal Infirmary, as well as those in use at the Royal Edinburgh Hospital for Sick Children.

The first Edinburgh pharmacopœia was prepared and issued by the Royal College of Physicians of Edinburgh in 1699, and was a small duodecimo volume which gave a number of prescriptions then in common use, with their method of preparation. There was little attempt to standardize the substances used in the preparation of remedies, and an alkaline powder, for example, was derived from powdered crabs' claws and red coral, and its impressiveness was enhanced by the inclusion of bezoar stone and prepared pearls. Several of the receipts are long, and a noteworthy preparation was the Mithridatium Damocratis against poisoning, which contained forty-eight ingredients from flowers, seeds, gums and oils, of which opium seems to have been the most active. There was nothing in this first pharmacopœia that could be called disgusting, but in a second edition of the pharmacopœia, issued in 1722,

and a third edition in 1736, some animal substances were introduced, probably as a concession to popular medicine. These included goats' dried blood, urine mixed with salt to prepare sal ammoniac, millipedes dried at a gentle heat and used as a stimulating ingredient of various medicines, dried bees similarly employed, and *Bufo preparatus* made from toads desiccated in an earthen pot and reduced to powder. Fourteen editions of this Edinburgh pharmacopœia appeared up to 1841, when the last was published.

In 1752 there appeared the Pharmacopœia Pauperum for the use of the Royal Infirmary of Edinburgh, and this, while avowedly founded upon the Edinburgh pharmacopœia of the College of Physicians, omitted many of its prescriptions and included a number of short formulæ which could be dispensed extempore; it also contained an index of the principal disorders with their appropriate remedies. Later editions of this appeared in 1770 and 1795. In order to bring about greater exactitude in chemical pharmacy and to supply a criticism and commentary upon the use and actions of the various remedies, a type of book called a dispensatory appeared about the middle of the eighteenth century. One of the best of these was "The New Dispensatory," published in London by Dr. William Lewis in 1753, and later editions of this were revised by Dr. Andrew Duncan (junior), professor of materia medica in Edinburgh, and called "The Edinburgh New Dispensatory." This dispensatory attempted to combine the various preparations contained in the pharmacopœias issued by the three Colleges of Physicians in London, Edinburgh and Dublin. This work was rewritten by Sir Robert Christison, Duncan's successor in the chair of materia medica at Edinburgh, and issued in 1842, and as

Christison was chairman of the committee appointed by the General Medical Council to prepare the British Pharmacopœia, the first edition of this work, appearing in 1864, was naturally founded upon his Dispensatory.

Several of the preparations first introduced in the Edinburgh pharmacopœias have found their way into general and official use. For example, Andrew Plummer, one of the founders of the medical faculty at Edinburgh University in 1726, introduced the *Pilula antimonii composita* containing antimony and calomel, which goes by his name. Dr. James Hamilton, who wrote a book on "The Utility and Administration of Purgative Medicines" in 1805, was a dignified Edinburgh practitioner of whom portraits were painted by Dyce and Raeburn and, through his habit of wearing a three-cornered cocked hat long after general fashion had adopted the cylindrical form of head gear, he was known among his professional colleagues as "Cocky Hamilton"; he introduced Hamilton's pill containing compound extract of colocynth and extract of hyocyamus, which is still in popular use. James Gregory, professor of medicine in Edinburgh University at the beginning of the nineteenth century, introduced Gregory's powder, which has undergone many modifications, but which, according to Gregory's original formula, consisted of calcined magnesia 6 grains, powdered rhubarb 2 grains, and powdered ginger 1 grain. At a more recent date Sir Thomas Fraser, professor of materia medica at Edinburgh University, after a course of experimenting with various West African arrow poisons, introduced tincture of strophanthus as a substitute for digitalis.

The present fourth edition of the Pharmacopœia of the Royal Infirmary of Edinburgh omits directions and minor details referring to methods of preparation,

and gives the quantities to be employed according to both imperial and metric systems.

In *disorders of the digestive system* a favourite prescription is the *Mistura alba* (white mixture), designed to have an antacid effect and act as an aperient, in a tablespoonful dose, with the following composition :—

R	Light magnesium carbonate	-	-	-	-	7½ grains
	Magnesium sulphate	-	-	-	-	20 grains
	Peppermint water	-	-	-	-	to ½ fl. oz.

The alkaline powders introduced by B. W. Sippy for the treatment of gastric and duodenal ulcer are more conveniently dispensed in the form of mixtures, of which the dose is a tablespoonful at the times ordered. Number 1 powder is prescribed as *Mistura magnesiæ oxidi et sodii citratis*, and is used for its aperient as well as neutralizing effect when the patient tends to be constipated. Number 2 powder, prescribed as *Mistura calcii carbonatis*, is used for its constipating as well as neutralizing effect when the patient shows a tendency to diarrhoea. These are as follows :—

R	No. 1	Light magnesia				
		Sodium citrate				
		Sodium bicarbonate, of each	-	-	-	10 grains
		Compound powder of tragacanth	-	-	-	5 grains
		Distilled water	-	-	-	to ½ fl. oz.
	No. 2	Precipitated calcium carbonate	-	-	-	10 grains
		Sodium bicarbonate	-	-	-	30 grains
		Compound powder of tragacanth	-	-	-	5 grains
		Distilled water	-	-	-	to ½ fl. oz.

There are various alkaline mixtures for use in acid dyspepsia, and of these the following *Mistura bismuthi et sodii* is very frequently used for its combined antacid, anti-spasmodic and soothing properties, in tablespoonful doses after meals :—



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R Bismuth oxycarbonate	-	-	-	-	-	10 grains
Sodium bicarbonate	-	-	-	-	-	10 grains
Glycerin	-	-	-	-	-	40 minims
Dilute hydrocyanic acid	-	-	-	-	-	2½ minims
Compound tincture of cardamoms	-	-	-	-	-	20 minims
Distilled water	-	-	-	-	-	to ½ fl. oz.

When, on the other hand, an acid bitter tonic is required to stimulate digestion, the *Mistura acidi phosphorici cum cinchona* is a favourite form of this type of remedy, a tablespoonful being taken in water three times daily after meals :—

R Dilute phosphoric acid	-	-	-	-	-	15 minims
Tincture of nux vomica	-	-	-	-	-	
Compound tincture of cinchona, of each	-	-	-	-	-	20 minims
Peppermint water	-	-	-	-	-	to ½ fl. oz.

There are numerous preparations of laxative character, of which most contain liquid extract of *cascara sagrada*. In one of these, the *Mistura cascarae sagradae composita*, the prescription also contains liquorice, euonymus, spirit of chloroform, elixir of gluside, oil of anise, and glycerin, but the favourite preparation is the *Mistura cascarae et glycyrrhizae cum glycerino*, in which liquid extract of *cascara sagrada*, liquid extract of liquorice and glycerin are simply dispensed in equal parts, and of the mixture one teaspoonful is taken at night or after meals as may be necessary. In habitual constipation, when a pill for occasional use is preferred to a mixture, the following *Pilula aloini composita* is frequently prescribed :—

R Aloin	-	-	-	-	-	1 grain
Dry extract of nux vomica	-	-	-	-	-	¼ grain
Dry extract of belladonna	-	-	-	-	-	¼ grain
Compound extract of colocynth	-	-	-	-	-	2 to 3 grains

In *respiratory disorders* accompanied by cough and expectoration, there are numerous forms of stimulating expectorant, of which the most frequently used is the *Mistura ammonii carbonatis cum scilla* in tablespoonful

doses as often as may be necessary. It has the following composition :—

R	Ammonium carbonate	-	-	-	-	5 grains
	Tincture of squill	-	-	-	-	15 minims
	Spirit of chloroform	-	-	-	-	15 minims
	Syrup of tolu	-	-	-	-	20 minims
	Infusion of senega	-	-	-	-	to $\frac{1}{2}$ fl. oz.

A variation of this containing ipecacuanha in place of spirit of chloroform is the *Mistura pectoralis*, used for a similar purpose in the same doses :—

R	Ammonium carbonate	-	-	-	-	5 grains
	Tincture of ipecacuanha	-	-	-	-	10 minims
	Tincture of squill	-	-	-	-	10 minims
	Syrup of tolu	-	-	-	-	40 minims
	Infusion of senega	-	-	-	-	to $\frac{1}{2}$ fl. oz.

A very effective preparation used in cases of bronchitic asthma is the *Mistura lobeliae composita*, administered in tablespoonful doses every four hours, or less frequently as the asthmatic paroxysm is abating :—

R	Potassium iodide	-	-	-	-	10 grains
	Ammonium carbonate	-	-	-	-	5 grains
	Ethereal tincture of lobelia	-	-	-	-	20 minims
	Spirit of chloroform	-	-	-	-	20 minims
	Tincture of ipecacuanha	-	-	-	-	5 minims
	Infusion of senega	-	-	-	-	to $\frac{1}{2}$ fl. oz.

In cases of chronic bronchitis with weak cardiac action among old people who have difficulty in bringing up expectoration, the *Mistura ammonii chloridi cum digitale* is a favourite form of prescription. It is given in tablespoonful doses three times or more daily, and has the following composition :—

R	Ammonium chloride	-	-	-	-	10 grains
	Tincture of nux vomica	-	-	-	-	10 minims
	Tincture of digitalis	-	-	-	-	5 minims
	Spirit of chloroform	-	-	-	-	20 minims
	Infusion of senega	-	-	-	-	to $\frac{1}{2}$ fl. oz.

For use in phthisis, the *Pharmacopœia* contains the cough mixture of the Brompton Hospital Pharmaco-

pœia, which is greatly used, and also the following Mistura tussis (phthisis), which, in addition to being an anodyne cough mixture, is specially useful in checking the night sweats of patients who are affected by this weakening symptom. The dose is one tablespoonful at night, repeated if necessary :—

R. Solution of atropine sulphate (B.P. 1914)	-	-	-	-	1 minim
Syrup of codeine phosphate	-	-	-	-	60 minims
Acid infusion of roses	-	-	-	-	to $\frac{1}{2}$ fl. oz.

For similar use in checking night sweats, there is often employed the Pilula zinci cum belladonna, one pill being taken at night and being composed as follows :

Zinc oxide	-	-	-	-	3 grains
Dry extract of belladonna	-	-	-	-	$\frac{1}{2}$ grain

A variety of the pill originally introduced by Niemeyer, but containing ipecacuanha in addition, the Pilula digitalis et opii composita, is also useful in advanced phthisis, and one pill composed as follows is prescribed every six hours :—

R. Quinine sulphate	-	-	-	-	1 grain
Digitalis leaves	-	-	-	-	$\frac{1}{2}$ grain
Opium powdered	-	-	-	-	$\frac{1}{4}$ grain
Ipecacuanha root powdered	-	-	-	-	$\frac{1}{8}$ grain

In conditions of *anæmia* of the secondary type, or of pernicious anæmia with a low colour index, in which it is desirable to administer iron along with digitalis, the following mixture is an old favourite, and the iron and digitalis are prevented from producing an inky mixture by the addition of the phosphoric acid. The dose is one tablespoonful :—

R. Tincture of ferric chloride	-	-	-	-	10 minims
Tincture of digitalis	-	-	-	-	5 minims
Dilute phosphoric acid	-	-	-	-	15 minims
Glycerin	-	-	-	-	30 minims
Infusion of quassia	-	-	-	-	to $\frac{1}{2}$ fl. oz.

In a similar way when it is desired in a case of

anæmia and debility to combine iron with arsenic and nux vomica as a tonic, the following Mistura ferri et ammonii citratis composita provides a preparation of satisfactory appearance and taste :—

R. Iron and ammonium citrate	-	-	-	-	15 grains
Hydrochloride solution of arsenic (B.P.)	-	-	-	-	5 minims
Tincture of nux vomica	-	-	-	-	10 minims
Syrup of orange	-	-	-	-	40 minims
Distilled water	-	-	-	-	to $\frac{1}{2}$ fl. oz.

For various *nervous conditions* there are many preparations directed to different ends. For headaches or neuralgia, and also as an antipyretic in influenza, the most popular remedy is undoubtedly the Pulvis triplex, made up as follows :—

R. Phenacetin					
Acetylsalicylic acid, of each	-	-	-	-	5 grains
Caffeine	-	-	-	-	2 grains

A useful sedative is the Mistura chloralis et potassii bromidi. Given in tablespoonful doses, this relieves minor nervous symptoms and is devoid of depressing effect. The dose may be repeated every three hours in cases of delirium till a hypnotic effect is produced :—

R. Chloral hydrate	-	-	-	-	15 grains
Potassium bromide	-	-	-	-	20 grains
Syrup of orange	-	-	-	-	40 minims
Distilled water	-	-	-	-	to $\frac{1}{2}$ fl. oz.

When it is desired to administer potassium iodide, this is commonly done by means of the Mistura potassii iodidi, as given below. There is also an alkaline potassium iodide mixture containing ammonium carbonate and sodium bicarbonate which is used as an expectorant in chronic bronchitis, and a compound potassium iodide mixture of more stimulating properties in which ipecacuanha tincture, spirit of chloroform and syrup of squill are added, the potassium iodide

being prevented from decomposing by the addition of ammonium carbonate. The dose of any of these is one tablespoonful in water :—

R. Potassium iodide	-	-	-	-	-	10 grains
Aromatic spirit of ammonia	-	-	-	-	-	20 minims
Distilled water	-	-	-	-	-	to $\frac{1}{2}$ fl. oz.

Among *urinary conditions*, albuminuria of the orthostatic type is frequently treated, in addition to rest and dietetic regulations by calcium lactate, for which the *Mistura calcii lactatis* is used, the dose being one tablespoonful thrice daily :—

R. Calcium lactate	-	-	-	-	-	10 grains
Tincture of capsicum	-	-	-	-	-	2 minims
Distilled water	-	-	-	-	-	to $\frac{1}{2}$ fl. oz.

In painful cystitis with acid urine the spasm and frequency are relieved by the *Mistura sodii citratis composita*. This may be given in doses of one tablespoonful three times daily after food, but it is usually necessary to give in addition large quantities of sodium or potassium citrate at more frequent intervals :—

R. Sodium citrate						
Potassium bicarbonate, of each	-	-	-	-	-	10 grains
Tincture of hyoscyamus	-	-	-	-	-	30 minims
Tincture of belladonna	-	-	-	-	-	5 minims
Infusion of buchu	-	-	-	-	-	to $\frac{1}{2}$ fl. oz.

The Pharmacopœia also contains numerous formulæ for the administration of remedies which are less commonly used but for which a standard method of preparation is desirable. Among these is the *Gelatum codeinæ*, which is greatly beloved by patients suffering from the irritable cough of phthisis or painful conditions of the pharynx and larynx. The preparation has an elegant appearance, and a teaspoonful of this administered occasionally has an immediately soothing effect :—

R. Gelatin	-	-	-	-	-	-	-	80 grains
Glycerin	-	-	-	-	-	-	-	4 fl. oz.
Codeine	-	-	-	-	-	-	-	4 grains
Citric acid	-	-	-	-	-	-	-	40 grains
Essence of raspberry	-	-	-	-	-	-	-	40 minims
Balsam of tolu	-	-	-	-	-	-	-	80 grains
Elixir of gluside	-	-	-	-	-	-	-	60 minims
Distilled water	-	-	-	-	-	-	-	2 fl. oz.
Solution of carmine	-	-	-	-	-	-	-	a sufficiency

The difficulty of prescribing a dose of male fern for *tapeworm* in a manner which is at the same time free from nauseous taste and practically easy of administration, is avoided by the *Haustus filicis*, of which a dose is made up as follows :—

R. Liquid extract of male fern	-	-	-	-	-	60 minims
Gum acacia in powder	-	-	-	-	-	60 grains
Elixir of gluside	-	-	-	-	-	15 minims
Syrup of ginger	-	-	-	-	-	120 minims
Cinnamon water	-	-	-	-	-	to 1 fl. oz.

An Enema quassiae against *threadworms* is made by infusing quassia for half an hour in a covered vessel, straining and administering, the quantities being as follows :—

R. Quassia chips	-	-	-	-	-	240 grains
Tepid water	-	-	-	-	-	1 pint

A nutrient enema is more of historic than practical interest at the present day when nutrition by the bowel is usually carried out by a solution of dextrose in normal saline solution, but the prescription for the following Enema nutiens is still sometimes used. Directions are given to switch the egg and milk thoroughly together; add the pancreatic solution and bicarbonate of sodium; and to let it stand in a jar of hot water for twenty minutes before administration :—

R. Egg	-	-	-	-	-	1
Fresh milk or beef tea	-	-	-	-	-	3 fl. oz.
Sodium bicarbonate	-	-	-	-	-	20 grains
Pancreatic solution	-	-	-	-	-	120 minims

In *febrile conditions* the *Mistura potassii tartratis acidi* forms a refreshing drink with diuretic properties. At the present day it is to a large extent displaced by a mixture of glucose and orange juice, but in cases in which the nutritive properties of the latter are not desired, it still finds a place, being composed as follows :

R. Acid potassium tartrate -	-	-	-	-	360 grains
Syrup of lemon -	-	-	-	-	1½ fl. oz.
Distilled water -	-	-	-	-	to ½ pint

A sedative and astringent application for *sprains*, effusions and other painful conditions of joints is afforded by the *Lotio plumbi cum opio*, which is made up as follows :—

R. Lead acetate -	-	-	-	-	4 grains
Opium in powder -	-	-	-	-	4 grains
Boiling distilled water -	-	-	-	-	to 1 fl. oz.

After this has been allowed to cool, lint is dipped in it, applied to the joint and covered with protective.

The *Lotio acidi picrici*, which is used for application to burns and bed-sores, is made up as follows :—

R. Picric acid -	-	-	-	-	45 grains
Alcohol -	-	-	-	-	2 fl. oz.
Distilled water -	-	-	-	-	to 1 pint

For application to eczema and other irritable *skin eruptions*, the *Lotio zinci cum calamina* is constantly in use and is applied with a brush from the following prescription :—

R. Zinc oxide -	-	-	-	-	30 grains
Prepared calamine -	-	-	-	-	60 grains
Glycerin -	-	-	-	-	60 minims
Rose water -	-	-	-	-	to 1 fl. oz.

The *Pharmacopœia* contains for about half its extent directions for making the preparations used in the special departments. These are mostly of a simple character containing one or two ingredients with their appropriate solvent or excipient. To a great extent these consist of lotions, ointments, and inhalations which

do not differ materially from those employed in the special departments of other hospitals. The Ear and Throat Department has a useful Inhalatio menthol. et iodi which is used in abnormal conditions of the nasal accessory sinuses and in Eustachian catarrh. Of the following prescription, 15 to 30 drops are added to hot water for inhalation :—

R. Menthol	-	-	-	-	-	5 grains
Weak tincture of iodine (B.P.)						
Acetic ether, of each	-	-	-	-	-	$\frac{1}{2}$ fl. oz.

There is also a Mistura diamorphinæ composita (heroin) which is used as a soothing remedy in acute laryngitis with cough, the dose being 20 to 60 drops daily :—

R. Diamorphine hydrochloride	-	-	-	-	1 grain
Spirit of chloroform	-	-	-	-	60 minims
Tincture of cochineal	-	-	-	-	25 minims
Syrup of orange	-	-	-	-	1 fl. oz.
Orange flower water	-	-	-	-	to $1\frac{1}{2}$ fl. oz.

For troublesome tinnitus and vertigo, the Mistura acidi hydrobromici cum quinina is frequently prescribed, the dose being from a dessertspoonful to a tablespoonful in water three times daily :—

R. Dilute hydrobromic acid	-	-	-	-	15 minims
Quinine sulphate	-	-	-	-	$\frac{1}{2}$ grain
Spirit of chloroform	-	-	-	-	5 minims
Distilled water	-	-	-	-	to $\frac{1}{2}$ fl. oz.

In the *Venereal Department*, the Mistura santali composita is used as a sedative mixture for cases of severe urethritis with purulent discharge and hæmaturia, the dose being one tablespoonful in water three times daily :—

R. Oil of sandalwood	-	-	-	-	80 minims
Oil of pimento	-	-	-	-	10 minims
Oil of cassia	-	-	-	-	5 minims
Morphine acetate	-	-	-	-	$\frac{1}{2}$ grain
Alcohol (90 per cent.)	-	-	-	-	to $\frac{1}{2}$ fl. oz.

A useful astringent application in cases with inflammation with discharge is the Lotio zinci sulphatis, com-



posed as follows :—

R. Zinc sulphate	-	-	-	-	-	16 grains
Compound tincture of lavender	-	-	-	-	-	120 minims
Glycerin	-	-	-	-	-	4 fl. oz.
Distilled water	-	-	-	-	-	to 8 fl. oz.

A preparation intended to keep a patient under the influence of mercury and iodide in cases of late syphilis between the periods of salvarsan treatment is afforded by the *Mistura hydrargyri perchloridi*, which is given in tablespoonful doses three times daily :—

R. Solution of mercuric chloride (B.P.)	-	-	30 minims
Potassium iodide	-	-	15 grains
Tincture of nux vomica	-	-	7½ minims
Compound infusion of gentian	-	-	to ½ fl. oz.

The section for the Skin Department contains numerous prescriptions chiefly for lotions and ointments. Of these the *Lotio plumbi composita* is an example of one for the application of tar used in seborrhœa and widespread dermatitis as follows :—

R. Strong solution of lead subacetate	-	-	120 minims
Solution of coal tar	-	-	120 minims
Zinc oxide	-	-	240 grains
Glycerin	-	-	240 minims
Distilled water	-	-	to 6 fl. oz.

The *Unguentum chrysarobini et picis* is an example of a number of ointments used for *psoriasis* :—

R. Chrysarobin	-	-	-	-	10 grains
Solution of coal tar	-	-	-	-	10 minims
Ammoniated mercury	-	-	-	-	10 grains
Hydrous wool fat	-	-	-	-	to 1 oz.

The formulæ for use at the Royal Hospital for Sick Children are in many cases similar to those for adults. In the case of mixtures, the convenient direction is adopted that the dose of all mixtures is one teaspoonful. A useful preparation for the vomiting and diarrhœa of children suffering from gastro-enteritis is the *Mistura bismuthi composita* :—

R	Bismuth oxycarbonate	-	-	-	-	2 grains
	Sodium bicarbonate	-	-	-	-	2 grains
	Compound powder of tragacanth	-	-	-	-	1½ grains
	Spirit of chloroform	-	-	-	-	1 minim
	Caraway water	-	-	-	-	to 60 minims

A useful tonic employed for children is the *Mistura ferri et malti*, of which a dessertspoonful may be given to children over seven years of age :—

R	Citrate of iron and ammonium	-	-	-	5 grains
	Tincture of nux vomica	-	-	-	5 minims
	Solution of arsenic	-	-	-	1 minim
	Liquid extract of malt	-	-	-	to 120 minims

Of cough mixtures there are two, the *Mistura pectoralis sedativa* containing :—

R	Camphorated tincture of opium	-	-	-	3 minims
	Tincture of ipecacuanha	-	-	-	5 minims
	Syrup of squill	-	-	-	20 minims
	Chloroform water	-	-	-	to 60 minims

and the *Mistura pectoralis stimulans*, containing :—

R	Ammonium carbonate	-	-	-	1 grain
	Tincture of ipecacuanha	-	-	-	5 minims
	Syrup of tolu	-	-	-	30 minims
	Infusion of senega	-	-	-	to 60 minims

At the present time a fifth edition of the *Pharmacopœia* is in preparation, designed to bring the formulæ into stricter conformity with the last edition of the *British Pharmacopœia*, and to make some of them better suited to the conditions of National Health Insurance Act practice.

## XI

# THE PHARMACOPŒIAS OF THE DUBLIN HOSPITALS

By R. H. MICKS, M.D., F.R.C.P.I.

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IT is interesting to remember that previous to the passing of the Medical Act of 1858 there were three "national pharmacopœias" in use in Great Britain and Ireland, the Dublin Pharmacopœia, the Edinburgh Pharmacopœia, and the London Pharmacopœia. The oldest of the three is the London Pharmacopœia, which was first published (by the Royal College of Physicians of London) in 1618; the Edinburgh College first issued a Pharmacopœia for Scotland in 1699, but not till 1761 did the Irish Houses of Parliament pass an Act empowering the President and Fellows of the Royal College of Physicians of Ireland "to frame and publish a code or pharmacopœia . . . which said code or pharmacopœia shall be followed and observed by all and every apothecary, chemist, druggist . . . throughout this kingdom." The College did not hasten to make use of this power, and actually the first Dublin Pharmacopœia (*Pharmacopœia Collegii Medicorum Regis et Reginæ in Hibernia*) was not issued till 1807. A second edition was published in 1826, and a third in 1850; the third was in English, the first two having been written altogether in Latin. The passing of the Medical Act of 1858 was followed by the appearance of the first edition of the British Pharmacopœia in 1864.

The compilers of the first Dublin Pharmacopœia were

proud of their work, and seem to have believed that, in addition to simplifying the task of the prescriber and dispenser, it was superior to both the other national pharmacopœias. John Crampton, a member of the Pharmacopœia Committee of the College and King's Professor of Materia Medica and Pharmacy in Dublin University, wrote in 1809 : " Numerous mistakes have repeatedly arisen from the use of the three current pharmacopœias. For every year sees a new Edinburgh Pharmacopœia, and no more recently than this year a new Pharmacopœia from the London College has appeared, a very polished work closely resembling our own, for many of its formulæ have been brought into agreement with those of our Pharmacopœia."

At the present day even the most patriotic Irishman could not make a similar claim for the pharmacopœias of the Dublin hospitals, for modern medical knowledge is so widely spread that in important matters the prescriptions of one group of hospitals do not differ materially from those of another : even the placebos are common property. If any point is characteristic of our hospital pharmacopœias it is their brevity and the simplicity of their prescriptions, virtues which we owe to the influence of the late Professor W. G. Smith, a man who combined a profound knowledge of chemistry with an experience of clinical medicine which taught him that the difference between one elaborate prescription and another was usually its effect of the senses rather than on the course of the disease.

An example of this commendable brevity is to be found in the first formula in the pharmacopœia of one Dublin hospital. It is a prescription for *ear-drops*, for instillation in acute otitis media.

R	Acidi borici	-	-	-	-	-	30 grains
	Spirit. vini rect.						
	Aquam dest. ãã ad	-	-	-	-	-	1 ounce

This formula illustrates the principle that the only antiseptic which can safely be brought into contact with a surface so delicate as the lining membrane of the middle ear is one which is free from destructive action on epithelium. The *Mistura ferri et ammonii citratis* of the same hospital is just as simple.

R	Ferri et ammonii citratis	-	-	15 grains
	Aquam ad	.	.	$\frac{1}{2}$ ounce

(Made up, and usually prescribed double strength).

Another hospital finds it simpler and more economical to use the compressed tablet of ferrous carbonate.

There are few prescriptions which are named after the great men who taught in the Dublin Schools during the first half of the nineteenth century, and the reason for this is that they made few noteworthy contributions to the treatment of disease by drugs. The same may be said of the Fathers of Medicine in other schools, for indeed a hundred years ago a scientific attitude towards the use of drugs was an impossibility; without a science of chemistry or a science of animal physiology even the shrewdest physician could not prescribe except empirically, with the result that in the century which preceded the dawn of modern medicine only one notable study of the action of a drug was made, William Withering's unique investigation of the effects of *digitalis*. Though such men as Graves and Stokes stood far above their contemporaries in their critical attitude towards the popular use of drugs, their fame rests not so much on their advances in therapeutics as on their study of disease. Thus Corrigan, who in 1832 first described aortic regurgitation (for a long time known as Corrigan's disease), has left no prescription bearing his name, unless indeed there is counted Corrigan's button, a metal button about the size of a threepenny-bit fastened to a wooden handle. The

button was heated in a flame and applied by a series of short taps along the dorsum of the thigh or the lumbar region in cases of sciatica or lumbago. Corrigan's button is still to be found in the instrument-cupboards of some hospitals, and, though it is rarely used, the author can testify that this method of "firing" if skilfully applied produces only a very superficial burn and may prove most effective.

*The treatment of fever.*—It is difficult for the modern reader to realize to what extent the time of a physician of a hundred years ago was occupied with the treatment of the continued fevers. In the time of Graves and Stokes the two "forms" of "fever" (typhus and typhoid) were recognized, but neither of the two teachers seems to have appreciated that Louis was right in asserting that they were distinct diseases; Graves indeed expressly taught that what is now known as typhoid was a modification of typhus fever. Nevertheless the abandonment of the practice of enforced starvation in all cases of fever is due to Graves.

"In a patient," he says, "labouring under fever and a prolonged abstinence, whose sensibilities are blunted and whose functions are deranged—it is not at all improbable that such a person will not call for food although requiring it; and if you do not press it upon him and give it as medicine, symptoms like those which arise from starvation in a healthy subject may supervene . . . You are called upon to interfere when the sensibility is impaired, and you are not to permit your patient to encounter the terrible consequences of starvation because he does not ask for nutriment."

Stokes recorded the occasion of Graves's famous commentary on his own teaching. Graves was going round the hospital when, on entering the convalescent ward, he began to expatiate on the healthy appearance of some who had recovered from severe typhus. "This is all the effect of our good feeding," he exclaimed; "and lest, when I am gone, you may be at a loss for an epitaph for me, let me give you one in three words—

‘ he fed fevers.’ ”

As Graves did not draw a clear distinction between the diet in typhus and “ abdominal typhus ” (enteric) it was left for his successors in the Dublin hospitals to restrain their pupils from going to the other extreme of over-feeding patients suffering from enteric fever. Since the time of Graves, Dublin teachers have not failed to appreciate the patient’s need for as much easily digested food as he can absorb, but they have always taught the danger of excess, for too often the attempt to supply the patient with his “ caloric requirements ” of at least 3,000 calories a day is followed by disaster. The “ pint and a half of milk ” which is the traditional base-line diet for typhoid in the Dublin hospitals has a calorie content of a little under 1,000, but it is often as much as can be given without producing distention.

All great men have their foibles. One of Graves’s was the administration of tartar emetic in typhus, and it is interesting to note that William Stokes was in agreement with him in this respect, and that Trousseau was converted to its use. He seems always to have prescribed it in conjunction with opium, and it is easy to suggest that it was the opium, not the antimony, which did good. But is it possible that these three great men were not deceived, and that antimony had some specific action on the virus of typhus, an action which may be re-discovered some day in the future? The following is a typical prescription taken from the pages of Graves’s “ Clinical Lectures ” :—

R	Antimonii tartarizati	-	-	-	6 grains
	Mucilaginis				
	Syrupi papaveris albi āā	-	-	-	1 ounce
	Aquæ	-	-	-	10 ounces
	Misce, fiat mistura, sumat fl. oz. ss. omni semihorā.				

Graves’s advocacy of the use of opium in the cholera

epidemic of 1832, and later for the diarrhœa of enteric, has brought him eponymous fame as the inventor of *Graves's pill*, as *Pil. plumbi c. opio* was first called. His instructions for the dispensing of this pill (now banished from the pages of the B.P. to those of the British Pharmaceutical Codex) are as follows :—

A scruple of the acetate of lead, combined with a grain of opium, was divided into twelve pills, and of these one was given every half-hour until the rice-water discharges from the stomach and rectum began to diminish.

It is strange how therapeutic fashions persist. There is no evidence that either the lead in *Pil. plumbi c. opio* or the ipecacuanha in Dover's powder contributes to the effect of the prescription, yet both are still popular formulæ throughout the world.

The use of opium cannot be discussed without the reminder that in the famous *Rotunda Treatment of Eclampsia*, introduced by Tweedy during his Mastership of the Rotunda Hospital, an important point was the use of morphine in preference to other narcotics for the control of the convulsions.

The name of Cheyne is usually associated in the physician's mind only with Cheyne-Stokes breathing, but it should be remembered that he was the originator of the *Mistura diaphoretica* that is to be found in every hospital pharmacopœia of to-day. The formula of *Cheyne's mixture* is quoted by Graves as follows :—

It is prepared by dissolving a drachm of carbonate of ammonia in three ounces and a half of water, with as much lemon juice as will saturate it; the mixture is then sweetened with syrup of orange peel, and given in doses of two table-spoonfuls every third or fourth hour. In this way a solution of the citrate of ammonia is formed, which possesses the properties of a mild, antifebrile, and gently stimulant diaphoretic.

Graves damns this with faint praise ("It cannot be denied that this mixture answers the purpose of an expectant remedy, calculated to pass away the time



and do no injury") and suggest the use of the carbonate of sodium instead of that of ammonia, thus avoiding the disagreeable taste of the ammonia salt.

*Tonics.*—Presumably a "tonic mixture" will always be a necessity in medicine unless human nature changes very much. If any prescription can be claimed as indigenous to Dublin or characteristic of the Dublin graduate it is surely the *Mistura ferri sulphatis*, or "M. F. S." Its formula is as follows:—

R	Magnesii sulphatis	-	-	-	60 grains
	Acid. hydrochlorici dil.	-	-	-	10 minims
	Ferri sulphatis	-	-	-	3 grains
	Syrup. zingiberis	-	-	-	30 minims
	Aquam ad	-	-	-	$\frac{1}{2}$ ounce

A similar placebo, almost as popular with those connoisseurs of the out-patient department who like their tonic to show direct evidence of its "operation," is our *Mistura amara aperiens*:—

R	Magnesii sulphatis	-	-	-	40 grains
	Acid. sulphurici dil.	-	-	-	10 minims
	Tinct. cardamomi co.	-	-	-	15 minims
	Infusum quassiae ad	-	-	-	$\frac{1}{2}$ ounce

*Alcohol in therapeutics.*—One of the few instances in which Stokes and Graves seem to have been seriously lacking in clinical insight is in the *Rules for the Administration of Wine In Fever* drawn up by Stokes and warmly endorsed by Graves. These rules maintained that the weakening of the first sound in advanced fever (one of Stokes's profound and original observations) was the most important indication for the administration of wine. While recognizing the dangers of giving too much (for it was no uncommon thing in those days of vigorous prescribing for the fever-patient to be comatose from alcohol as well as from fever), it is almost certain that they misinterpreted the beneficial action of alcohol; such a mistake

was excusable in a lesser man, but not in him whose epitaph was "he fed fevers." The modern Dublin hospital spends but a few pounds a year in "stimulants."

*Sedatives.*—Dublin hospitals, like other teaching hospitals, wisely shun "blunderbuss mixtures" of narcotics, preferring that the student should be trained, so far as possible, to observe the effects of single drugs. But their pharmacopœias contain one sleeping-draught so well known as to deserve mention, the famous "Three Fifteens." Who first prescribed it, is not known; it is traditionally attributed to the great William Stokes, but this is unlikely, as chloral hydrate was not introduced to therapeutics until towards the end of his life (he died in 1878). Possibly it is one of the many anonymous bequests of the pharmaceutical and clinical genius of Walter Smith. The formula of *Three Fifteens* is as follows :—

R	Tinct. opii	-	-	-	-	-	15 minims
	Pot. bromid.	-	-	-	-	-	15 grains
	Chloral. hydrat.	-	-	-	-	-	15 grains
	Aquam ad	-	-	-	-	-	1 ounce

Though its morphine content is inadequate to relieve the pain of, say, the early days of pneumonia, this formula is valuable as teaching the student the important principle that in fevers accompanied by pain and restlessness a mere pain-killing drug is not sufficient to produce sleep; its action must be assisted by a pure narcotic.

*General anæsthetics.*—Dublin continues to be a staunch upholder of the doctrine that chloroform is a drug never to be used save in exceptional circumstances, and to the present day nitrous oxide and ether are almost the only volatile narcotics used to induce surgical anæsthesia. It is worth while to mention a delicate and practical method of detecting and re-

moving impurities (peroxides and aldehydes) which may be formed when ether is acted upon by air, moisture and light. It was devised and published (1933) by E. A. Werner, Professor of Chemistry in Dublin University, and has proved to be most useful in hospital work.

*Werner's silver method for purification of ether.*—Ether is shaken up with about a quarter its volume of 5 per cent. silver nitrate solution, and the mixture made strongly alkaline with 20 per cent. caustic soda. A dark grey precipitate of silver hydroxide forms as the result of the interaction of the caustic soda and the silver nitrate, but if the ether is impure this precipitate rapidly turns black. More silver nitrate is then added, and the shaking repeated until the precipitated hydroxide of silver no longer turns black. The sediment is then allowed to subside, which takes only a few minutes, and the ether decanted, when it is ready for use as a general anæsthetic.

This test detects and removes all the impurities which may render ether irrespirable and unsuitable for use as an anæsthetic.

*Cough mixtures.*—In his *Observations on the Dublin Pharmacopœia*, published in 1830, by Wm. F. Montgomery, is found among the “Extemporaneous Preparations” a formula for *Tar Water* as a reminder of Bishop Berkeley’s advocacy of its use.

Take of tar, two pints,  
Water, a gallon.

Mix, stirring with a stick for a quarter of an hour, then, as soon as the tar subsides, strain the liquor, and keep it in a well-stoppered jar.

*Remarks.*—The water dissolves a portion of the tar, and becomes impregnated with empyreumatic oil, a small portion of resinous matter and acetic acid : the solution has the colour of Madeira wine, and a sharp empyreumatic taste.

William Stokes had a great belief in the efficacy of tartarized antimony in the early stage of acute bronchitis, but the once popular *Vinum antimoniale* seems to have disappeared from the pages of hospital formularies, as it has from those of the B.P. In

chronic bronchial catarrh he valued highly the daily sponging of the chest with a liniment composed of spirits of turpentine and acetic acid, the formula for which was as follows :—

R	Spiritus terebinthinæ	-	-	-	3 ounces
	Acidi acetici	-	-	-	$\frac{1}{2}$ ounce
	Vitelli ovi	-	-	-	1 ounce
	Olei limonis	-	-	-	60 minims
	Aquam rosæ ad	-	-	-	6 ounces

The formula survives, only slightly changed, in the *Linimentum stimulans* of many Dublin hospitals :—

R	Saponis mollis	-	-	-	180 minims
	Aquæ bullientis	-	-	-	7 ounces
Dissolve, and when cold add					
	Liq. ammoniæ fort.	-	-	-	1 ounce
	Olei terebinthinæ	-	-	-	2 ounces

The story of the dispensary doctor who, when confronted with a full waiting-room, ordered that “them with coughs and spits” should help themselves to one stock-bottle, and “them with coughs and no spits” to another, emphasizes an important principle of therapeutics, which is illustrated by the presence in every hospital pharmacopœia of a *Mistura expectorans stimulans* and a *Mistura expectorans sedativa*. A favourite *Mist. expect. stim.* is the following :—

R	Ammonii carbonatis	-	-	-	5 grains
	Tinct. scillæ	-	-	-	10 minims
	Tinct. senegæ	-	-	-	15 minims
	Theriacæ (i.e. treacle)	-	-	-	60 minims
	Aquam menth. pip. ad	-	-	-	$\frac{1}{2}$ ounce

Whatever the real virtues of a mixture such as this, it cannot be denied that it both looks and tastes strong. It has been suggested that its merit consists chiefly in its content of treacle, for recently when the sacrilegious hands of a reviser removed this ingredient from the formula, the chronic bronchitics of the out-patient department complained immediately that

“their bottle” had lost its strength.

The sister prescription for a *Mist. expect. sed.* is :—

R	Liq. morphinæ hydrochlor.	-	-	5 minims
	Acidi hydrocyanici dil.	-	-	3 minims
	Syrup. tolutani	-	-	30 minims
	Aquam chlor. ad	-	-	$\frac{1}{2}$ ounce

Many prescribers instruct that the prussic acid should be omitted. It cannot serve any useful purpose, and it is surely a dangerous principle to permit this deadly poison to be used for dispensing medicines, no matter how diluted the solution.

*Antacids.*—A typical *Mist. bismuthi*, *Mist. alkalina*, or *Mist. alba* is the following :—

R	Bismuthi carbonatis			
	Magnesii carbonatis levis			
	Sodii bicarbonatis āā	-	-	5 grains
	Mucilag.	-	-	q. s.
	Aquam ad	-	-	$\frac{1}{2}$ ounce

But it is illustrative of the modern trend in prescribing that such a stock mixture is now little used except for the “gastric stomachs” of the out-patient department. In cases of gastro-duodenal ulceration one, or at the most a couple, of the members of the range of alkalis or alkaline salts is used, according to the preference of the physician and the taste of the patient, and bismuth is becoming less popular than heretofore owing to its appearance in the motions which tends to obscure the recognition of melæna.

*The recent trend.*—A survey of the list of drugs purchased during the year shows that more and more surely the hospital pharmacopœia is becoming the student’s guide to the composition of tonics, cooling draughts, bitter mixtures, in fact the great mass of harmless, but none the less necessary, placebos. In prescribing the potent drugs physicians tend to use less and less the stock mixtures of their hospital

formulary, and order instead the active principle uncombined. Thus the *Mist. digitalis* survives in most pharmacopœias, but how often is the cork withdrawn from the bottle (if indeed the "stock" is ever made up)? Gone is the art by which the student-dispenser of bygone days lent sweetness to the drowsy syrups of the east, for his successor merely selects a tablet from a bottle. It was well said of a great scientist that "he never mixed the wine of science with the soda-water of superstition," and it is to be hoped that the modern student learns from his hospital pharmacopœia to distinguish between the active drugs and the shams.

THE PHARMACOPŒIA OF THE  
HOSPITAL FOR SICK CHILDREN,  
GREAT ORMOND STREET

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UP to the middle of the last century institutions devoted solely to the care of the sick child did not exist in this country, and the infant and the child were accommodated in hospitals along with the adult population. Though "Great Ormond Street" (founded 1852) was the first of the children's hospitals, it had humble beginnings and it took some years before it became organized into an institution worthy of modern conceptions of a hospital. The history of its Pharmacopœia is therefore, compared with many great general hospital foundations, a short one, and actually the earliest Pharmacopœia in possession of the chief pharmacist is one dated 1880, at the time when the famous Dr. Gee and Dr. Cheadle were physicians to the hospital, Dr. (now Sir Thomas) Barlow figuring as assistant physician. It is, however, of interest, before reviewing the pharmacopœial literature of Great Ormond Street from 1880 to the present day, to refer to Dr. C. West's book "The Diseases of Infancy and Childhood" (1865). Dr. West was on the staff of the hospital for a time and the "index to formulæ" in his treatise gives a fairly representative idea of the prescriptions in use at the time at Great Ormond Street.

The formulæ in this index total 38, and besides these 38 formulæ full use is made in the text of Dover's

powder, mercury with chalk, ipecacuanha wine, nitrous ether, compound tincture of camphor, tartar emetic, silver nitrate, belladonna, and bromide. The combinations in these prescriptions differ a good deal from those in the 1880 Great Ormond Street book, but their main purpose is much the same, the chief designation being febrifuges and expectorants, next astringents, stomach correctives, and then tonics. Despite the lack of modern knowledge of its specific action, ol. morrhuae was then a favourite, and it is interesting to note the appellation "steel wine" for the iron with which, as now in different terms, it was combined. Both these formulæ and the early pharmacopœia give the impression of the greater popularity then of quinine as a tonic for children: perhaps the increasing subtlety of the modern child's senses and the failure to exact obedience in taking such bitter medicines, as existed in Victorian days, has something to do with this. Alum is another example of the retirement of an earlier favourite in the astringent class. Here too, we find for the first time the minim doses of ol. ricini for diarrhœa. Dr. West was convinced of its use, it appears, by observing its efficacious effect when used by Dr. Baly in the treatment of dysentery among pensioners at Millbank Penitentiary. Filix mas, now firmly ensconced as the most successful anthelmintic (against tape-worm), was used by Dr. West at a time when others were using tin-filings, turpentine, or pomegranate bark. He also used santonin as an enema and prescribed it in rather larger doses (2-3 grains) by mouth than to-day for treatment of thread-worm, with success. Dr. West was in the habit of ordering zinc sulphate and belladonna in increasing doses for whooping-cough, and it appears that others gave up to 40 gr. zinc sulph. and 6 gr. of ext. belladonnæ



to children of eight years.

Of the stimulants a notable absentee from Dr. West's list, but which is present in the 1880 Pharmacopœia of the hospital, is now an old friend—*Mist. ætheris cum ammonia*, i.e. spirit of ether minims  $3\frac{1}{2}$ , aromatic spirit of ammonia minims  $3\frac{1}{2}$ , which then contained camphor water but is now made up with chloroform water to one drachm.

It is amusing to record that many of the physicians of 40 years ago who in their writings sternly decried the prolonged use of alcohol in treatment, must themselves have unwittingly been guilty of this very thing, for it appears that they were subjecting the child to considerable doses of this noxious drug by reason of the fact that in these days many gallons of tinctures were dispensed, a practice which has been corrected for many years past by using, in preference, infusions and extracts. As an instance, it was found that in a 2 drachm dose of *Mistura aperiens* (1880) a dose of 20 minims of alcohol, equivalent to a drachm of whisky, was being administered; this was later remedied by an improved *Mist. alces co.* with only 3 minims per drachm.

The 1880 edition was small and contained only 20 pages of prescriptions compared with 45 pages in the 1933 edition; moreover the latest book contains a great increase in the number of the prescriptions, being 181 more than in the 1880 issue. In the latter 83 formulæ, with Latin titles but English prescriptions, there were 42 *misturæ*, 12 lotions, 11 *pulves interni* and 10 *unguenta*. Analysis discloses the fact that of this number 42 prescriptions still appear in the 1933 edition practically unchanged. In addition to these 42 prescriptions—*Mist. ol. morrhuæ* and *Mist. ol. morrhuæ cum ferro* have been made into pharmaceutical emulsions, so that actually 44 prescriptions are still in daily use which have

stood the test of 54 years experience in the treatment of children. One would probably not be far amiss in citing half this number as popular, and though it is not possible to describe all of them, a few special favourites in various categories can be quoted.

*Anti-dyspeptic mixtures ; astringents ; aperients.*—The improvement in feeding methods has gone far to help the baby's stomach in its functions, but less frequent breast-feeding in this hurrying generation, restless and inclined to bolt its meals even in infancy, has kept alive the old complaint of "wind" in the stomach.

Sodium bicarbonate	-	-	-	-	1½ grains
Aromatic spirit of ammonia	-	-	-	-	1½ minims
Glycerin	-	-	-	-	5 minims
Peppermint water	-	-	-	-	to 60 minims

This explosive mixture, *Mist. carminativa*, works wonders, though a trifle strong for some infants who may prefer a teaspoonful of the old-fashioned remedy, dill water, or *aqua anethi*, which, curiously enough, though a favourite among the laity, has never been incorporated in the carminative mixture of the hospital. *Mist. gent. alkalina*, the older child's soothing and consoling remedy for dyspepsia and a boon as a harmless placebo, will probably be seen as one of the most frequent prescriptions in out-patients for years to come. It contains :

Sodium bicarb.	-	-	-	-	2 grains
Spirit of chloroform	-	-	-	-	1 minim
Compound infusion of gentian-	-	-	-	-	60 minims

In 1880 *Mist. bismuthi co.* was made with bismuth subnitrate and sodium bicarbonate. For decades this mixture was made by pouring boiling water over these two ingredients in a mortar, standing for 15 minutes and then bottling off. This was to hasten chemical change and woe to the dispenser who just *mixed* the

substances in the bottle. Burst bottles were not an infrequent event in those days but, thanks to improved knowledge and methods, the preparation of the present mixture does not entail this possibly hazardous episode. In comparatively recent times bismuth carbonate has entirely ousted the subnitrate in mixtures.

From the evidence of the successive pharmacopœias it would appear that chalk mixtures more than retain their popularity as astringents and whereas in 1891 only *Mist. cretæ c. catechu* appears, in 1933 *mist. cretæ* and *Mist. cretæ aromatica* have been added. Another prescription, perhaps not so favoured as this last but which has survived since 1880, is *Mist. hæmatoxyli composita*. It reads :

Liquid extract of logwood	-	-	12 minims
Tincture of ipecacuanha	-	-	3 minims
Tincture of opium	-	-	$\frac{1}{2}$ minim
Chalk mixture	-	-	to 120 minims

*Kaolin*, a valuable addition in the treatment of toxic diarrhoea, is a recent arrival and it is probable that both *Mist. kaolin* and *Mist. bismuth. cum creta* are the better remedies than the above historic mixture in the majority of cases.

*Mist. ol. ricini* (castor oil 5 minims, mucilage of acacia 15 minims, peppermint water to 1 drachm) is still a favourite prescription, though less required since better conditions have prevailed in the urban community and since the inception of dried milks. This mixture of the 1880 edition is still included unchanged. In the days not so long ago when mothers were more inclined than is the case to-day to feed babies on potatoes, stout, or anything from their table and when infective diarrhoea was rampant, it was a remedy as useful as any astringent. Whereas in those days hundredweights of castor oil were needed

annually the consumption now is only a few pounds. Mist. hydrarg. perchlor. (minims 5 of solution of mercuric chloride) has been on the pages of all editions: it was often the custom to combine it with the castor oil mixture in cases of diarrhœa.

Rhubarb with soda (in mixture or as a powder) or with mercury are as necessary and efficacious as ever, though no more pleasant to take; in later editions the Pulv. rhei cum hydrargyro contains added sod. bicarbonate 2 grains.

Of aperients, Mist. sal. aperiens has been resident in the book for many years and probably cascara and aloes have always been favourites for regular medication of this kind, but the formula Mist. aloes co. is a decided improvement on many mixtures of this type and is a more recent addition, at first called Mist. aperiens but latterly, in order to discard therapeutic terminology, it was given the above title. It contains:

Tinct. of nux vomica	-	-	-	-	1 minim
Tinct. of ginger	-	-	-	-	2 minims
Liquid extract of hyoscyamus	-	-	-	-	$\frac{1}{2}$ minim
Aloes	.	.	.	.	$\frac{1}{10}$ grain
Syrup of senna	-	-	-	-	15 minims
Dill water	-	-	-	-	to 60 minims

*Expectorants.*—For the stimulation of expectoration in the dry stage of bronchitis the old principle of giving irritants, which act by reflex nervous stimulation, still survives in the old time combination of ammonia and ipecacuanha present in all editions, and in the small dosage of  $\frac{1}{2}$  grain of ammon. carbonate and  $2\frac{1}{2}$  minims of tinct. ipecac. Perhaps of older date still is the prescription of senega with ammonia, which reads:

Ammonium carbonate	-	-	-	-	$\frac{1}{2}$ grain
Spirit of chloroform	-	-	-	-	2 minims
Syrup	-	-	-	-	15 minims
Infusion of senega	-	-	-	-	to 60 minims

Sedative cough mixtures contain ipecacuanha in double the dose of the above mixture and 5 minims of tinct. belladonnae, one with, and another without 5 minims of camphorated tincture of opium. These last have only been inserted in later years. One more ipecacuanha mixture has been retained from the beginning, *Mist. ipecacuanhæ opiata*:

Tincture of ipecacuanha	-	-	-	-	2½ minims
Sodium bicarbonate	-	-	-	-	2 grains
Spirit of nitrous ether	-	-	-	-	2½ minims
Camphorated tincture of opium	-	-	-	-	2½ minims
Diluted water	-	-	-	-	to 60 minims

While one more, a febrile mixture for which Dr. Poynton was responsible, is a useful and popular one: it contains the same ingredients as above but without sod. bicarb. and with liq. amm. acet. and syr. tolu added.

*Iron tonics.*—These have always been popular but recent evidence having suggested the greater frequency of nutritional (usually hypochromic) anæmia in the infant and young children than previously supposed, interest in iron therapy has been renewed, particularly as to the best form in which to prescribe it. All the editions contain *Mist. ferri. perchloridi* and since 1900 a mixture containing tinct. nux. vom. has also been added. Modern opinion inclines to the view that either saccharated iron carbonate or iron and ammonium citrate are the most efficacious forms for proper absorption and they are included in mixtures bearing these titles. In the former mixture there is 5 grains of saccharated iron carbonate to 3i of chloroform water.

Cod-liver oil with iron has survived 54 years since the first edition, but the *Syr. ferri phosp. co. cum malto*, the useful *Mist. ferri. iodidi cum malto*, and *Syr. ferri cum manganio* are all additions of recent years. The last-named is ultra-modern, since it contains small proportions of copper and manganese, now regarded

as essential for the synthesis of hæmoglobin. Indeed the Pharmacopœia contains a veritable galaxy of iron preparations and one wonders whether the old-time advice as regards their use is always remembered. Eustace Smith wrote in 1884: "Tonics such as quinine, iron, the mineral acids and vegetable bitters are also of great value in the treatment of disease in the child. But they require to be given with judgment and must not be administered indiscriminately because the patients look weak and pale: a feeble-looking pallid child is not always benefited by iron and other tonics."

*Acid tonics.*—Of these it is interesting to note that the Mist. acid. hydrochlor. (containing  $\frac{1}{2}$  minim dilute hydrochloric acid) survived from 1880 to 1900 and was then deleted, but made its reappearance quite recently under another guise, Mist. pepsinæ cum senna (with 15 minims of dilute HCl) and with, one surmises, rather different but perhaps better informed intentions, i.e. to relieve the achlorhydria so often present in allergic subjects.

*Sedatives.*—Mist. pot. cit. and Mist. pot. chlor. have always been prescribed; Mist. pot. bromidi (containing 3 grains of the salt) was included from the beginning uncombined, but the addition of belladonna in another mixture has become a popular one for the modern nerve-racked child. The most recent 1933 edition takes cognizance of the march of therapeutics and justifiably includes that excellent sedative phenobarbitone: the mixture contains soluble phenobarbitone gr.  $\frac{1}{2}$ , pot. bromide gr. 2, elixir of glucide  $\frac{1}{2}$  minim to 1 drachm of chloroform water.

*Glucose mixtures.*—In these days of nervous exhaustion, with depletion of sugar storage, it would be surprising if the Pharmacopœia did not reflect one of the fashionable treatments of the day and include a glucose mixture. There are two, entitled acid and

alkaline, which contain respectively hydrochloric acid minims 15 with minims 20 of glucose, and sod. bicarbonate gr. 5 with half a drachm of glucose respectively, presumably to cater for apparent humoral divergencies.

Finally one happy advance has been the improved preparation and palatability of physic. Nauseating medicines are rare nowadays, since most mixtures and emulsions are made with nice flavouring. The *Emulsio petrolei*, for instance, which figures more on the out-patients paper than anything else, could almost be regarded with pleasure and likened to the joy of taking vanilla ice-cream.

It is difficult mostly to trace the individual source of the prescriptions as they have crept in one by one into the Great Ormond Street Pharmacopœia, but, true to British medical tradition, a conservative attitude in the matter of making alterations has been evident throughout. Very few formulæ have been discarded and many added, but only after careful consideration and after years of practical trial by the staff. The old stalwarts of children's medicine, such as West, Gee, Cheadle, Barlow, led the way in formulating the prescriptions of the Pharmacopœia and as years go on other physicians make their donation.

Greater knowledge of pharmacology is now available for the student of medicine, but it would seem that greater interest in this has been far from reviving the art of prescribing, which is surely languishing. There may be many reasons for this, but it is evident that belief in drugs is less profound than it was and the inclination of to-day, based perhaps on increasing knowledge, is to use drugs only for more exact indications. To some extent, perhaps, this is desirable in the treatment of children since general measures, especially corrective ones, are as important as physic

though the latter is useful and desirable when the indications are clear.

This feeling has evidently been in the minds of those responsible for the compilation of this Pharmacopœia, since one third of the modern additions are devoted to matters of general importance and contain valuable information on all sorts of subjects—diet, care and criteria of growth of the child, chemical blood tests, and various forms of special therapy—a veritable vade mecum. This Pharmacopœia would seem to fulfil the desiderata of the ideal manual of this kind. It is certainly comprehensive, it serves as a guide to qualified and unqualified students of medicine, and, by a careful selection of the formulary, the prescriptions cover a wide field; moreover it saves time in dispensing and makes for economy in cost.

The Hospital for Sick Children owes much to its pharmacists and to no one more than the present holder of the post, Mr. Wicliffe Peck, for whose help I am much indebted in exploring the pharmacopœial records of the Hospital.



### XIII

## THE PHARMACOPŒIA OF THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST

By W. ERNEST LLOYD, M.D., F.R.C.P.

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THE Brompton Hospital for Consumption and Diseases of the Chest was founded in the year 1842 and the first pharmacopœia was published in 1848. Since that time, the pharmacopœia has passed through eleven editions and the last edition was published in 1928. A revised edition is contemplated in the near future. Comparison of the more recent editions with those published in the "eighties" reveals some interesting changes in the methods of prescribing drugs in the treatment of diseases of the chest. Many years ago, pills appear to have been a popular method of administration and in 1876, 37 pills were included in the pharmacopœia. This number has steadily diminished until two pills only are included in the present edition, although some others have survived as "tabellæ." Another change is the disappearance of "syrops" from the later editions. These were prescribed chiefly in the treatment of cough but many of their ingredients are retained in one or other linctus. On the other hand, few changes have occurred in the "misturæ" and many of the formulæ popular sixty years ago are constantly in use at the present time.

The present edition of the pharmacopœia is arranged in two sections, a general and a special section, and in

the latter are included the prescriptions in use in the Throat, Nose, and Ear Department of the hospital. Of all the medicines dispensed, mention must first be made of cod-liver oil which is prescribed in two forms :

(a) *Emulsio olei morrhuæ.*

R	<i>Olei morrhuæ</i>	-	-	-	-	-	$\frac{1}{2}$ ounce
	<i>Mucilaginis acaciæ</i>	-	-	-	-	-	120 minims
	<i>Glusidi</i>	-	-	-	-	-	$\frac{1}{4}$ grain
	<i>Olei amygdalis essentialis</i>	-	-	-	-	-	$\frac{1}{2}$ minim
	<i>Aquam</i>	-	-	-	-	-	ad 1 fluid ounce

and (b) *Extractum malti cum oleo morrhuæ* in which extract of malt standardized to a definite minimum of reducing sugars is combined with 15 per cent. of standardized oil. No flavouring has been found desirable. This preparation is in great demand not only in the out-patient department but in the wards where it is given as a routine to all patients suffering from tuberculosis, and it is estimated that many tons are dispensed in the course of a year.

### THE TREATMENT OF COUGH

The treatment of cough calls for various forms of prescription, and a teaspoonful dose of one or other "linctus" is still the most popular. The pharmacopœia contains ten examples of such preparations. Of these, the most used are :

(a) *Linctus tolu. cum opio* (Gee's linctus).

R	<i>Tincturæ opii camphoratæ</i>						
	<i>Syrupi scillæ</i>						
	<i>Syrupi tolutani</i>	-	-	-	-	-	āā 20 minims

(b) *Linctus ipecacuanhæ.*

R	<i>Tincturæ ipecacuanhæ</i>	-	-	-	-	-	5 minims
	<i>Spiritus anisi</i>	-	-	-	-	-	4 minims
	<i>Syrupi tolutani</i>	-	-	-	-	-	20 minims
	<i>Syrupum scillæ</i>	-	-	-	-	-	ad 60 minims

The above is very palatable and should be taken in

hot water. When a more sedative linctus is necessary, the following are usually prescribed :

(a) Linctus diamorphinæ.

R	Diamorphinæ hydrochloridi	-	-	$\frac{1}{18}$ grain
	Glycerini	-	-	10 minims
	Syrupum picis liquidæ	-	-	ad 60 minims

Or (b) Linctus sedativus.

R	Liquoris morphinæ acetatis	-	-	8 minims
	Spiritus chloroformi	-	-	3 minims
	Succi limonis	-	-	15 minims
	Mucilaginem acaciæ	-	-	ad 60 minims

A favourite mixture used to relieve cough is :

Mistura camphoræ composita.

R	Tincturæ opii camphoratæ	-	-	30 minims
	Oxymellis scillæ	-	-	30 minims
	Spiritus chloroformi	-	-	5 minims
	Infusum cascariellæ	-	-	ad 1 fluid ounce

Lozenges are also prescribed extensively in the treatment of cough and perhaps the most favoured is Troch. glycyrrhizæ, the "Brompton lozenge," of which the formula is as follows :

R	Extracti glycyrrhizæ	-	-	3 grains
	Olei anisi	-	-	$\frac{1}{2}$ minim
	Massæ trochisci acaciæ	-	-	10 grains
	Misce, et fiat trochiscus.			

Another lozenge which is prescribed in large quantities is Troch. menthol et eucalypti., and it has become almost as popular as the "Brompton blacks." The formula is :

R	Olei eucalypti	-	-	1 minim
	Menthol	-	-	$\frac{1}{10}$ grain
	Basis rosæ	-	-	15 grains

#### THE TREATMENT OF BRONCHITIS

The pharmacopœia contains a large number of expectorant mixtures for use chiefly in the treatment of chronic bronchitis. The most commonly prescribed are :

(a) *Mist. ammonii chloridi.*

R	Ammonii chloridi	-	-	-	-	20 grains
	Extracti glycyrrhizæ liquid	-	-	-	-	60 minims
	Glycerini	-	-	-	-	20 minims
	Aquam	-	-	-	-	ad 1 fluid ounce

(b) *Mist. potassii iodidi alkalina.*

R	Potassii bicarbonatis	-	-	-	-	15 grains
	Ammonii carbonatis	-	-	-	-	3 grains
	Potassii iodidi	-	-	-	-	3 grains
	Aquam camphoræ	-	-	-	-	ad 1 fluid ounce

(c) *Mist. ipecacuanhæ cum ammonia.*

R	Ammonii carbonatis	-	-	-	-	5 grains
	Tincturæ ipecacuanhæ	-	-	-	-	10 minims
	Aquam camphoræ	-	-	-	-	ad 1 fluid ounce

(d) *Mist. sodii cum æthere chlorico.* This mixture deserves special mention as many patients suffering from chronic bronchitis prefer the "hot water medicine" as it is popularly called, to any other. The formula is as follows :

R	Sodii bicarbonatis	-	-	-	-	10 grains
	Sodii chloridi	-	-	-	-	3 grains
	Ætheris chlorici	-	-	-	-	5 minims
	Aquam anisi	-	-	-	-	ad 1 fluid ounce
						ex aqua calida.

The modern student is often puzzled as to the nature of "ætheris chlorico." It is synonymous with "spirit of chloroform" and links the product with the early days of the chemistry of the parent compound.

## THE TREATMENT OF ASTHMA

In the routine treatment of asthma, the most commonly prescribed mixture is *Mist. potassii iodidi cum stramonio*, of which the formula is :

R	Tincturæ stramonii	-	-	-	-	5 minims
	Extracti glycyrrhizæ liquid	-	-	-	-	20 minims
	Potassii iodidi	-	-	-	-	3 grains
	Spiritus chloroformi	-	-	-	-	5 minims
	Aquam	-	-	-	-	ad 1 fluid ounce

Although the introduction of ephedrine is comparatively recent, its value is such that it is prescribed commonly in the treatment of asthma and some patients rely upon it alone for relief from their attacks. Tablets of ephedrine hydrochloride are prescribed in  $\frac{1}{4}$  or  $\frac{1}{2}$  grain doses and occasionally it is combined with phenazone ( $1\frac{1}{2}$  grains). Other patients still rely upon burning an asthma powder as the best means of helping them during the attack and the pharmacopœia contains one powder, Pulv. stramonii compositus, representative of a once numerous class. The formula is :

R	Stramonii foliorum	-	-	-	-	240 grains
	Anisi fructus	-	-	-	-	120 grains
	Potassii nitratis	-	-	-	-	120 grains

#### INHALATION TREATMENT

The pharmacopœia contains both "inhalationes" and "vapores," the former title being given to solutions used on a Burney Yeo oro-nasal respirator and the latter to all solutions inhaled from steam. The most popular inhalation is Solutio cinnamomi composita and is used chiefly in the treatment of tuberculous disease of the larynx. The formula is :

R	Menthol	-	-	-	-	4 parts
	Olei cinnamomi	-	-	-	-	3 parts
	Olei limonis	-	-	-	-	4 parts
	Creosoti	-	-	-	-	10 parts
	Olei pini pumilionis	-	-	-	-	10 parts
	Spiritus chloroformi	-	-	-	-	10 parts

The most commonly prescribed "vapor" is Vapor menthol. :

R	Menthol.	-	-	-	-	1 grain
	Spiritus Rectificati	-	-	-	-	ad 60 minims
	Aquæ ferventis (temp. 60° C.)	-	-	-	-	20 fluid ounces

Vapor menthol et eucalypti has the same formula

with the addition of olei eucalypti 1 minim.

Creosote, as well as being used in certain inhalations as already indicated, is prescribed in many ways and for those patients who find it difficult to swallow capsules, Mist. creosoti may be given. The formula is as follows :

R	Creosoti	-	-	-	-	-	2 minims
	Gummi acaciæ	-	-	-	-	-	1 grain
	Olei limonis	-	-	-	-	-	$\frac{1}{2}$ minim
	Glusidi	-	-	-	-	-	$\frac{1}{2}$ grain
	Aquam	-	-	-	-	-	ad 1 fluid ounce

It is found that children can usually take this mixture without difficulty. Creosote is also used as a vapour bath which is in daily use at the hospital in the treatment of septic conditions of the lung, especially bronchiectasis. Five ounces of crude creosote (B.H.) are vaporized from a metal container in a closed apartment having a capacity of 850 cubic feet. The patient's eyes are protected by means of goggles. The vapour is inhaled for ten to thirty minutes according to the tolerance of the patient who is encouraged to expectorate as much as possible during the "bath." The creosote used should be derived from beechwood or pine and the specification in the pharmacopœia ensures a product which is reasonably constant in composition.

The Brompton Hospital has a compressed-air chamber which is used in the treatment of cases of advanced emphysema, often with beneficial results. The pharmacopœia contains the following description: Air, filtered and in continuous motion, is maintained for one hour under a pressure of 8 lb. or 10 lb. per sq. in. above that of the atmosphere; the required maximum pressure being reached gradually from atmospheric in half an hour, and the reduction to normal occupying a similar period. The chamber has a window through which patients undergoing the treatment are observed

and stimulants may be administered if necessary.

#### LOCAL APPLICATIONS

The pharmacopœia contains one plaster, Cataplasma kaolini compositum. After many experiments, the formula given below was found to be the most satisfactory. In it the percentage of kaolin is a little more and the glycerine less than in the new formula of the British Pharmacopœia.

R	Kaolini subtilissimi (sterilisati)	-	-	14 ounces
	Acidi borici	-	-	1 ounce
	Thymol.	-	-	6 grains
	Menthol.	-	-	24 grains
	Methylis salicylatis	-	-	3 grains
	Olei camphoræ essentialis	-	-	24 grains
	Olei menthæ piperitæ	-	-	3 grains
	Glycerini	-	-	10 ounces

Of the formulæ included in the special pharmacopœia of the Throat, Nose, and Ear Department of the hospital, mention must be made of Pulvis benzocainæ co. This contains equal parts of benzocaine (formerly called "anæsthesin") and orthocaine. This powder is used to relieve the pain on swallowing which accompanies the later stages of tuberculous disease of the larynx by insufflation through a Leduc's tube and instructions as to the method of its use are supplied to each patient.

#### THE TREATMENT OF PULMONARY TUBERCULOSIS

In the treatment of pulmonary tuberculosis, as carried out in the wards of the hospital, drugs play but a secondary part to the main principle of treatment which is by rest in bed, supplemented in certain cases by local rest to the diseased lung by means of artificial pneumothorax or other methods of collapse therapy. The majority of cases, however, are given a "tonic" especially if the appetite is poor and the mixtures

prescribed most frequently are :

(a) *Mistura nucis vomicæ cum gentiana.*

R	<i>Tincturæ nucis vomicæ</i>	-	-	-	5 minims
	<i>Sodii bicarbonatis</i>	-	-	-	15 grains
	<i>Infusum gentianæ</i>	-	-	-	ad 1 fluid ounce

Or (b) *Mistura gentianæ acida.*

R	<i>Acidi hydrochlorici diluti</i>	-	-	-	10 minims
	<i>Infusum gentianæ</i>	-	-	-	ad 1 fluid ounce

Antiseptic inhalations on a Burney Yeo inhaler are still used commonly in the routine treatment of pulmonary tuberculosis but, at the present time, they are used chiefly as mentioned above, in the treatment of tuberculous laryngitis. Tuberculous enteritis calls for dietetic as well as medicinal treatment and *Mistura bismuthi* is commonly used to relieve diarrhoea :

R	<i>Bismuthi carbonatis</i>	-	-	-	10 grains
	<i>Sodii bicarbonatis</i>	-	-	-	10 grains
	<i>Tincturæ cinnamomi</i>	-	-	-	6 minims
	<i>Aquam menthæ piperitæ</i>	-	-	-	ad 1 fluid ounce

When the diarrhoea is associated with much pain, *Mistura bismuthi opiata* may be given. The formula is :

R	<i>Bismuthi subnitratis</i>	-	-	-	20 grains
	<i>Tincturæ catechu</i>	-	-	-	40 minims
	<i>Tincturæ opii</i>	-	-	-	5 minims
	<i>Infusi caryophylli</i>	-	-	-	$\frac{1}{2}$ ounce
	<i>Aquam chloroformi</i>	-	-	-	ad 1 fluid ounce

Night sweats are not common if the patient is nursed under the best hygienic conditions, but if they persist in spite of such treatment, *Tabletta zinci oxidi et belladonnæ* is given. The formula is :

R	<i>Extracti belladonnæ sicci</i>	-	-	-	$\frac{1}{4}$ grain
	<i>Zinci oxidi</i>	-	-	-	$2\frac{1}{2}$ grains

In singulâ quâque tabletta.

Unfortunately, the time has not yet come when a specific treatment for tuberculosis can be included in the *Pharmacopœia* and the use of tuberculin has been almost entirely given up. Mention must be made of



gold preparations and, although these cannot be regarded in any way as a specific treatment, there is evidence to show that, if given carefully, such preparations do appear to have a beneficial effect in certain types of the disease. Those used most commonly are (a) sanocrysin or (b) crisalbine, both of which must be given intravenously. If it is desired to give intramuscular injections, myocrisin or solganal B may be used. The initial dose of any gold salt should be a small one, namely, 0·05 gm. to 0·1 gm., and the dose slowly increased until a maximum dose of 0·5 gm. is reached. Some cases do better if the smaller doses are given over a longer period. The treatment may have to be abandoned if complications develop and of these the most common are diarrhoea, albuminuria and skin rashes.

I should like to express my thanks to Mr. J. W. Spence, Pharmacist to the hospital, for his kind help in the preparation of this article.

## XIV

# THE NATIONAL HOSPITAL FOR NERVOUS DISEASES, QUEEN SQUARE

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THE National Hospital, founded in 1859, has never yet published a pharmacopœia. Indeed, the majority of the preparations dispensed now are prepared from individual prescriptions, but a number of these have sufficient in common to justify an article in this series. There is little doubt that, of the many great physicians on the staff of the Hospital in its early days, Sir William Gowers contributed most to the medicinal treatment of nervous diseases. His "Manual of Diseases of the Nervous System" is still prized by neurologists for its descriptive vitality. An examination of those parts of the book devoted to therapy and of the treatment sheets of the old case-books at Queen Square leaves the feeling that surprisingly little change has occurred from the favourite prescriptions of that time. Certain drugs, for instance, zinc and calcium in epilepsy, cannabis indica and valerian as sedatives, and cocaine as a local injection for the treatment of superficial pain, have almost disappeared from the hospital's list of prescriptions. The favourite prescriptions remain essentially the same, and in this article it is only possible to select for discussion these generally-accepted formulæ and to

to move from this narrow path.

# USED IN THE TREATMENT OF EPILEPSY

The treatment of epilepsy consists in an intelligent use of the bromides and luminal. While luminal, which has been on the market in this country since 1912, is undoubtedly a potent weapon for the control of fits, in no sense can it be said to have replaced the bromides. It has, moreover, one undoubted disadvantage, that its sudden withdrawal from an epileptic individual is apt to be followed by an alarming increase in the number of attacks. The importance of absolute regularity in its use must therefore be impressed on every patient or responsible relative. As adjuvants to the bromides, borax (first advocated by Gowers in 1870) and belladonna are useful, and small doses of arsenic certainly lessen the tendency to bromide skin eruptions. A typical hospital mixture is compounded of these ingredients as follows :—

R	Sodii bromid.	-	-	-	-	5-15 grains
	Sodii biborat.	-	-	-	-	5-10 grains
	Tinct. belladonn.	-	-	-	-	5-10 minims
	Liquor. arsenical.	-	-	-	-	1-3 minims
	Aq. chloroform.	-	-	-	-	ad ½ ounce
	Ft. mist. Sig. ½ ounce t.d.s., p.c.					

Luminal (phenyl-ethyl-barbituric acid) is so sparingly soluble in water that it is usually prescribed in tablet form. Its sodium salt, however, goes readily into solution, and can be included in a mixture, but it is, unfortunately, much more rapidly excreted than the insoluble compound. Sodium-luminal is therefore of most use either in small doses (half to one grain) in a mixture three times a day or in a single large dose (three to five grains) to control a burst of severe attacks. Such a dose is conveniently given as a hypodermic or slow intravenous injection in status epilepticus, and

sterile ampoules containing three grains in 1 c.cm. of an inert organic solvent are on the market for this purpose. The tablets, which are more commonly prescribed, are given in doses of from half to one and a half grains once, twice or three times in the day. In spite of what is often said, it is improbable that any serious toxic effects have followed the use of luminal in such quantities, but it is wise to limit the maximum single dose to one and a half grains and the maximum quantity in twenty-four hours to three grains.

When to give these remedies must depend upon the individual epileptic picture, and in consequence it is impossible to adopt an unchanging plan calculated to suit every case. Often enough, fits show a strict time sequence, for example, only occurring at night or in relation to some phase of menstruation. It is quite unnecessary for such patients to be kept under continuous drug treatment, but the remedies should rather be reserved to cover the time when the epileptic explosion is expected. Even when the fits are not so limited, but when a patient has more frequent or more severe attacks at definite intervals, a mild general plan of treatment can be usefully reinforced to control the increase in number or severity at those times. When an epileptic patient is seen for the first time, these and many other factors have to be taken into account. Unless there is some indication to demand specially-planned treatment, it is necessary to discover by the method of trial and error what substances and what amounts of these substances are required to control the attacks. It is best to start with some such mixture as that mentioned above, using first the smallest dose of each ingredient and increasing if there is failure to influence the attacks. Luminal should be kept in reserve until it is obvious that the bromide mixture is

inadequate alone, or unless the fits are occurring only at night, when luminal therapy is likely to have more effect. Once it has been decided that luminal must be given in addition to bromide, it is wise first to start with a half-grain tablet at night and to increase this if necessary to one grain, before beginning to give the drug through the day. This plan renders unimportant the drowsiness often noticed by patients at the start of luminal therapy, and the day period is adequately covered by the bromide mixture, given once, twice or thrice as may seem best.

The majority of epileptic individuals respond satisfactorily to these measures, and obstinate cases are rarely improved by increasing the dosage further. It is important to decide how long a patient should remain under treatment, when the fits have been properly controlled. This is a question which demands, but is rarely given, a definite answer. Too frequently patients are actively or tacitly allowed to abandon all treatment after attacks have ceased for a few weeks, and this is particularly true of the mild epileptic, who without any treatment at all may have had relatively long intervals between his fits. It is the universal rule at the National Hospital to continue with doses which have been proved to stop the attacks for at least two years from the last fit, and only then gradually to reduce the dosage of each ingredient. If during this time of reduction a further attack occurs, a return is made to the previous amounts and the patient is told to continue thus for at least another two years. Even if no attack occurs, about six months are taken to withdraw all remedies. The importance of absolute regularity in taking the drugs ordered cannot be too firmly impressed on the patient or his relatives. Although only a small proportion of individuals

ultimately cease to need medicine, a large number can be kept free of fits and in good health on little treatment, provided it is regularly administered.

#### DRUGS USED IN THE TREATMENT OF THE PSYCHO-NEUROSES

It is sometimes said that psychogenic illness should only be treated by psychotherapy, and that even to combine reassurance, explanation and encouragement with a mild degree of symptomatic medicinal treatment is to foster the patient's belief that his illness has physical, material origins. If the premises are granted, on which this conclusion is based, it is impossible to deny its stern logic, but the fact remains that most sufferers from functional nervous illness are considerably helped by symptomatic drug treatment. Hundreds of such patients attend the National Hospital every month, and years of experience have shown that nearly all of them feel better during their illness on a type of mixture which is best styled a sedative tonic :—

R	Sodii bromid.	-	-	-	-	5 grains
	Tinct. nucis vom.	-	-	-	-	5-10 minims
	Spirit. chloroform.	-	-	-	-	10 minims
	Inf. gent. co.	-	-	-	-	ad ½ ounce
	Ft. mist. Sig. ½ ounce t.d.s., p.c.					

In the out-patient practice of the Hospital, this kind of mixture is more frequently prescribed than any other and it is certain that the form of its prescription is one of the oldest which is still in use. The small dose of bromide, which should not exceed five grains, lessens anxiety and lightens the load of depression, while the tonic effect of the nux vomica leads to a physical sense of well-being. The bitter vehicle is a useful appetizer. Patients can, moreover, continue taking this medicine for weeks or months without fear of unpleasant consequences. It has yet to be demonstrated that the



leave a feeling of drowsiness the next day. Luminal in one-grain doses is also suitable for this kind of insomnia, especially in patients at the involutional period of life.

The length of time for which these hypnotics should be taken varies much from patient to patient, but there is no difficulty in abandoning them or at least in modifying their use after they have been taken regularly for a few nights. A wise plan is to instruct the patient to take the effective dose every night for a week, and then to endeavour to sleep without help on alternate nights. A great number of these individuals merely need to be started again on good habits of sleep, and nearly all of them will accept the statement that one bad night is harmless enough, provided the means of preventing its recurrence are at hand. Many of them, contrary to what is often believed, have a horror of depending upon drugs for their sleep, needing perhaps persuasion to try a hypnotic, but none to abandon it. Moreover, the assurance of a hypnotic at the bedside is frequently enough to dispel the anxiety concerning sleep on which insomnia often depends.

#### DRUGS USED IN THE TREATMENT OF PAIN

The minor headaches and neuralgias are readily relieved by aspirin, phenacetin and caffeine, either separately or in conjunction as the "three fives" tablet, which is rightly so popular at the National and every other hospital. Veganin tablets, the active principles of which are aspirin, phenacetin and codeine, are useful in cases in which the milder remedies fail, and one or two taken with an additional five or ten grains of aspirin may be ordered every four or six hours. Besides phenacetin, two other coal-tar derivatives found most helpful as occasional variants in



obstinate cases are pyramidon (5 to 8 grains) and phenazone (5 to 10 grains). As both of these drugs sometimes exert a toxic effect, particularly on the blood, it is inadvisable to allow them to be taken regularly for long periods.

The pain of *paroxysmal trigeminal neuralgia* stands by itself, both by reason of its severity and because nothing short of destruction of the nerve will promise permanent relief. It is often impossible, however, to arrange for this without delay, during which time a mixture of analgesic drugs may be useful. Many patients at the National Hospital find considerable temporary relief, at least in the earlier stages of the neuralgia, from the following prescription:—

R	Sodii bromid.	-	-	-	-	-	10 grains
	Tinct. gelsemii	-	-	-	-	-	10 minims
	Butyl-chloral. hydrat.	-	-	-	-	-	5 grains
	Aq. menth. pip.	-	-	-	-	-	ad $\frac{1}{2}$ ounce
	Ft. mist. Sig. $\frac{1}{2}$ ounce t.d.s., p.c.						

The mixture is best taken thrice daily, but it can be allowed more often, if the frequency of the bouts of pain demand it. Nevertheless, it cannot be over-emphasized that this and all other medicinal treatment are only palliative for a disease whose cure depends upon nerve destruction, either by alcohol injection or open operation.

The lightning pains of *tabes dorsalis* too quickly show a tolerance to whatever analgesic preparation is used. Frequent changes from one drug to another provide the best results, and tablets of aspirin, pyramidon, phenazone, veganin, and phenacetin in ordinary doses are consequently prescribed in great numbers at Queen Square for that purpose. A favourite cachet for strictly limited use in very resistant cases is prescribed thus:—

R	Pyramidon	-	-	-	-	-	7 grains
	Medinal	-	-	-	-	-	2 grains
	Heroin	-	-	-	-	-	$\frac{1}{8}$ grain

Ft. cachet. Sig. i, s.o.s.

A strong effort should, nevertheless, be made to avoid treating any tabetic pains with morphine or its derivatives, as there is no patient more likely to become an addict than the tabetic. If the pain is such that some remedy of the kind can no longer be avoided, the advantage of prescribing it unknown to the patient and in a cachet is obvious. The drama of the hypodermic injection is avoided, and cachets of an exactly similar appearance, but with the heroin omitted, can be substituted as soon as the worst of the pain is overcome. The small dose of medinal has a sedative effect as important to a man suffering intense pain as the analgesic property of the other ingredients.

For *gastric crises* the most favoured remedy is chloretone in doses of ten to fifteen grains. It is best given in a capsule twice or at most thrice in the twenty-four hours. As it is apt sometimes to cause circulatory collapse, careful observations of the pulse, heart, and blood pressure should be made during its use.

#### DRUGS USED IN THE TREATMENT OF MIGRAINE

For migraine the kind of treatment still in general use at the Hospital is first by the medicine which is yet universally known as Gowers's migraine mixture and secondly by luminal. Both these remedies must be given for long periods of time in severe cases, and if the response is satisfactory there is no reason why a patient should not continue to take both the mixture and tablets indefinitely. The formula for the mixture originally advised by Sir William Gowers was as follows :—

R	Sodii bromid.	-	-	-	-	5-10 grains
	Liq. trinitrini	-	-	-	-	2 minims
	Acid. hydrobrom. dil.	-	-	-	-	5 minims
	Tinct. nucis vom.	-	-	-	-	5 minims
	Tinct. gelsemii	-	-	-	-	5-10 minims
	Syrup. limonis	-	-	-	-	60 minims
	Aq.	-	-	-	-	ad $\frac{1}{2}$ ounce
	Ft. mist. Sig. $\frac{1}{2}$ ounce t.d.s., p.c.					

Many slightly different formulæ go by the name of Gowers's mixture to-day, but all do or should contain the nitroglycerin round which the medicine was composed and which is prescribed in an acid medium to avoid decomposition. It is a matter of clinical experience that tincture of belladonna in 5 to 10 minim doses is usefully included in this mixture, and at the National Hospital it is often substituted for the tincture of nux vomica. As Gowers originally pointed out, a mixture containing nitroglycerin must be taken after food, because on an empty stomach the drug passes too rapidly into the blood, "and may cause brief cephalic discomfort, which, though not objectionable in itself, sometimes deters the patient from continuing the medicine." The mixture should not be taken during the attack, which is often accentuated by it, presumably because of increased dilatation of the intracranial vessels. The second important line of attack in the treatment of migraine consists in the regular administration of luminal. Half-grain tablets are prescribed to be taken every night, but a further half grain should be ordered for use as soon as an attack threatens. If this is done, and particularly if the patient is able to rest undisturbed for one or two hours, the expected attack is often cut short. During the headache, and in the milder degrees especially, aspirin, phenacetin and the other common analgesic tablets are prescribed in the usual doses and generally give relief, provided vomiting is not so marked as to

prevent their retention.

#### DRUGS USED IN THE TREATMENT OF PARKINSONISM

All the symptoms of Parkinsonism, both of the post-encephalitic type and of the kind usually called paralysis agitans, are temporarily improved by stramonium and its pharmacological allies. It is essential, however, that the chosen preparations should be continually given in doses which just produce toxic symptoms, of which dryness of the mouth and difficulty in accommodating the eyes for near vision are most obvious to the patient. As a renewed tolerance to increasing doses of these drugs is speedily established, it is necessary to change the dosage frequently, as often as every week if this can be managed. It is a general experience that hyoscine is the most satisfactory member of the series in paralysis agitans, while stramonium is more often helpful in post-encephalitic Parkinsonism. Typical prescriptions are as follows :

R	Hyoscin. hydrobrom.	-	-	-	-	1/200 grain
	Aq.	-	-	-	-	ad $\frac{1}{2}$ ounce
	Ft. mist. Sig. $\frac{1}{2}$ ounce t.d.s., p.c.					

If the dose of hyoscine is slowly increased as suggested, most patients can finally be brought to take 1/75 grain three times daily with fair comfort and more or less permanently.

R	Tinct. stramon.	-	-	-	-	15 minims
	Aq. chloroform.	-	-	-	-	ad $\frac{1}{2}$ ounce
	Ft. mist. Sig. $\frac{1}{2}$ ounce t.d.s., p.c.					

Five-minim increments of the tincture are added as tolerance is established, amounts as large as 90 minims being eventually taken three times daily in most cases. Sometimes it is an advantage to include a sixth of a grain of pilocarpine nitrate, particularly for those individuals who have an abnormal sensitivity to stramonium.

The tinctures of belladonna and of hyoscyamus are sometimes used according to the same plan, but rarely with better results. Whatever drug is used, however, the importance of continuous therapy and also the necessity for some discomfort while toxic effects are

apparent should be carefully explained to the patient.

#### DRUGS USED IN THE TREATMENT OF NEURO-SYPHILIS

The routine medicinal treatment of neuro-syphilis at the National Hospital still consists in the giving of mercury and iodide by the mouth, and of concurrent mercury inunctions. Mercury and iodide are given as a mixture, similar to that used in many hospitals and often designated *Mistura hydrargyri biniodidi*. Efforts are made to increase the dose of both the active ingredients, particularly the iodide, rapidly, and it is in this more than in any other direction that the mixture is at all specialized. In nearly every case there is no difficulty in reaching a maximum dosage of 90 minims of the liquor hydrarg. perchlor. and of 60 grains of potassium iodide. The importance of large quantities of iodide in all forms of meningo-vascular syphilis at least is well established. A typical formula would run as follows :—

✓ R	Liquor. hydrarg. perchlor.	-	-	-	30-90 minims
	Potass. iodid.	-	-	-	10-60 grains
	Glycerini	-	-	-	60 minims
	Aq.	-	-	-	ad 1 ounce
	Ft. mist. Sig. 1 ounce t.d.s., p.c.				

Individuals possessing an intolerance to iodides are never a serious source of trouble, as their idiosyncrasy is invariably revealed with the first few doses. Fortunately they are uncommon, but it is rarely possible for them to continue taking the mixture even if the iodide content is reduced to quite ineffective amounts. There are no grounds for the belief that increasing the dose overcomes the intolerance.

Inunctions of mercury are usually given concurrently with this mixture, 60 grains of the official ung. hydrarg. being rubbed into a different part of the skin surface once or twice a day. The inuncted area is

afterwards dressed and bandaged for purposes of cleanliness. In the early days of the hospital, no patient was considered properly treated with mercury until some degree of stomatitis and even loosening of the teeth had been achieved. Now, with a greater realization of the part played in such a reaction by coincident dental sepsis, with delicate tests which reveal the response to treatment and with a more efficient array of anti-syphilitic remedies, the same heroic results are not demanded. It is not possible to discuss the treatment of neuro-syphilis at greater length, and, indeed, the courses of metallic injections which form the main attack in the treatment of every case of syphilis to-day hardly come within the scope of this paper.

In the series of articles now collected from *The Practitioner*, a large number of well-tried prescriptions, published as the pharmacopœias of different hospitals, have been discussed. Inevitably, the case of the National Hospital is different. For many reasons it prefers not to possess an official pharmacopœia, but like every hospital with a tradition it has its favourite combinations of drugs. The formulæ of these may be subject to slight variations as they reach the Hospital Dispensary from their different authors, but the traditional plan remains the same and an indication of this plan has been recorded here.

## THE PHARMACOPŒIA OF THE HOSPITAL FOR TROPICAL DISEASES

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IN writing an article on the pharmacopœia of the Hospital for Tropical Diseases a word of explanation becomes necessary at the very outset, for, of necessity, this contribution must vary considerably from most of the excellent foregoing articles, namely, those of general hospitals. As will be inferred from the name the hospital is one the work of which is specialized. To qualify for admission the patients must have resided or travelled abroad, but a few, after admission, on investigation prove to have complaints non-tropical in origin. This affects the pharmacopœia, bringing into use prescriptions varying little or not at all from those in common use in the large general hospitals; but here attention will be directed mainly to those commonly used in the treatment of tropical complaints.

The original Seamen's Hospital was a warship, one of the "wooden walls of old England," which was anchored in the Thames. From the last of these hulks the hospital was transferred ashore and thus the first "Dreadnought Hospital" began its work at Greenwich. Even as the old warships must have seen many a man suffering from malaria, so in the Dreadnought Hospital and its branch hospital at the Albert Dock, seamen in increasing numbers were found to have tropical diseases. This was particularly the case at the Albert Dock Hospital, and it led to the foundation there of

the London School of Tropical Medicine by Sir Patrick Manson. The Great War, with our forces far-flung throughout the world, led to such increased demand for accommodation, both for patients and teaching purposes that in the following years, the Albert Dock Hospital becoming inadequate to meet the demand, the Hospital for Tropical Diseases was opened in Endsleigh Gardens and the London School of Tropical Medicine was housed in the same building, until later it moved to its present splendid home in Keppel Street. Originating in this way one would expect to find many of the prescriptions from the pharmacopœia of the Dreadnought Hospital in use, but, owing to the trend of tropical medicine to-day, they survive mainly in the treatment of non-tropical disorders, while even the preparations used in the treatment of tropical diseases have undergone frequent changes. Favourite prescriptions in tropical medicine have not enjoyed their pre-eminence very long and, indeed, perhaps this contribution to the series may hardly deserve its title.

In modern medicine the use of drugs is diminishing. In tropical medicine, largely owing to the number of parasitic infections, drug treatment is still paramount. Dr. Cecil Wall (page 49) remarked that: "To-day it would seem prescribing is almost a lost art, factory-made physic has displaced the carefully devised formulæ of our predecessors." This indictment must be admitted as true in its wide sense in tropical practice. In many territories practitioners are still at great distances from settler or prospector, and chemists' shops do not exist in bush or jungle. The large drug manufacturing firms have seen in this their opportunity and now supply drugs and substances in readily serviceable forms for every need. Many of these have proved their value at home and abroad, and hence the use of so many



proprietary preparations in the hospital. With the vast amount of research at present given to tropical diseases many new drugs and preparations appear annually. A certain proportion of these are tested in the hospital yearly and, if of proven worth, are adopted till displaced by some more effective substance. The chemical formulæ of some of these substances are so complicated that they may well claim to be "carefully devised formulæ," and it may be argued that the art of careful prescribing has not been lost, but that its exercise has been transferred to doctor and highly trained chemist working in combination. Many of these substances must be mentioned as favourite prescriptions in this article.

#### DRUGS USED IN TREATMENT OF MALARIA

Quinine is still the most useful drug, and in the prophylaxis of the disease is the least dangerous. The newer drugs, plasmoquine and atebrin, to mention the most popular, cannot be continuously taken with safety. The stock mixture used in the hospital is as follows :—

R. Quinine hydrochloride	-	-	-	-	5 grains
Dilute hydrochloric acid	-	-	-	-	5 minims
Chloroform water	-	-	-	-	to $\frac{1}{2}$ ounce

A variation of this mixture with dilute hydrobromic acid minims 10 replacing the hydrochloric acid is used when a tendency to cinchonism exists. In acute cases or when quick control of the parasites is imperative, quinine is given intravenously or intramuscularly, the bihydrochloride salt being used owing to its greater solubility. The usual dose being seven to ten grains dissolved in seven to ten c.cm. of sterile distilled water.

The effervescent mixture is not often used now. It is as follows :—

R	No. 1.	Hydrochloride of quinine	-	-	-	10 grains
		Citric acid	-	-	-	20 grains
		Syrup of orange	-	-	-	60 minims
		Water	-	-	-	to $\frac{1}{2}$ ounce
	No. 2.	Carbonate of ammonia	-	-	-	4 grains
		Bicarbonate of potash	-	-	-	20 grains
		Water	-	-	-	to $\frac{1}{2}$ ounce

A tablespoonful of each to be mixed and drunk during effervescence three times daily.

For children euquinine is a favourite form as it has the advantage of being almost tasteless, but recently a preparation of quinine with dried milk powder has been tested in the hospital. Lacquin contains 5 grains of quinine ethyl carbonate to a dessertspoonful of the powder, and this amount is dissolved in a cupful of water. This powder is an advance in treatment and has an additional advantage abroad where milk supplies are often difficult or impossible to be obtained.

*Plasmoquine or beprochin.*—This substance was for some time the favourite alternative to quinine. The active constituent is N-diethyl-amino-isopentyl-8-amino-6-methoxy-quinoline. It is used by itself or combined with quinine, and is administered in tablet form. The simplex tablet contains 0.02 gramme, and the dosage recommended is one tablet three times daily p.c. for seven days, then four days interval is allowed, then three days of one tablet three times a day followed by an interval of four days in each week up to the sixth week.

The plasmoquine co. tablets contain 0.01 gramme of plasmoquine with 0.125 gramme of quinine sulphate, and are the more frequently used form. Dosage is two tablets thrice daily after food for four or five periods of six days each period being separated by intervals of four days. Pauses in treatment become necessary when toxic symptoms occur. These are headache,

abdominal pain, nausea, vomiting, and cyanosis. Renal pain may occur with methæmoglobinæmia and methæmoglobinuria, the urine simulating that of blackwater fever. Tab. plasmoquine co. has the advantage of acting more rapidly than quinine on the sexual forms of the parasite in subtertian malaria. "The crescents disappear from the circulation after three days' full dosage" (Manson-Bahr). Neither quinine nor plasmoquine should be used when the onset of blackwater fever is feared. The disease has developed in patients in the hospital following their exhibition.

*Atebrin*.—This substance (dihydrochloride of alkylamino-alkyl-amino acridine) is now very much used. It is comparatively free from toxic effects, but abdominal pain and yellow tinting of the skin may result from its administration. It has one great advantage in that it does not lead to blackwater fever and can be given in that disease and therefore in subtertian malaria when the patient is bordering on blackwater fever. The drug is given in tablet form in doses of one tablet (0.1 gramme) three times daily after food for five days. This course being repeated after an interval of five to seven days. Children and pregnant patients take it well. It acts on both sexual and asexual forms of the parasite in benign and quartan, and on the ring forms in subtertian malaria.

*Esanofele*, a proprietary preparation much used abroad, has now been superseded.

#### DRUGS USED IN TREATMENT OF TRYPANOSOMIASIS

Two drugs are now in common use in treating this disease, the African sleeping sickness. *Bayer 205* or *germanin* is a complex organic urea compound. It is given intravenously in weekly doses of 1 gramme dissolved in 10 c.cm. of sterile water until ten doses

have been given. Albumin and granular casts, as a rule, appear in the urine after the first few doses have been given, but they usually disappear in a few weeks after cessation of treatment. Should relapse occur as shown by rise of temperature and reappearance of trypanosomes in the blood the injections of the drug must be resumed, but more often a change is made to the other drug, tryparsamide.

*Tryparsamide* (N-phenyl glyceinamide-p-arsionate) is the more useful drug when the disease has involved the nervous system. It is given intravenously, beginning with 1 gramme, then 2 grammes, reaching 3 grammes for the third and subsequent doses, until ten or twelve injections have been given. Dissolved in sterile water, it is injected at weekly intervals, but some advocate more frequent dosage. Many patients have become totally blind following its use, so watch should be kept for symptoms, such as ocular pain, failing vision, lachrymation and photophobia, suggesting optic atrophy. Jaundice may also appear.

Atoxyl or soamin (sodium arsanilate) and tartar emetic formerly given in treatment of this disease have now given place to the above-mentioned drugs.

#### DRUGS USED IN TREATMENT OF SCHISTOSOMIASIS

Potassium antimonyltartrate and sodium antimonyltartrate are still probably the most reliable drugs in the treatment of schistosomiasis. The latter drug is less toxic and more soluble. One or the other drug is given intravenously every second day or twice weekly. Beginning with grain  $\frac{1}{2}$  dissolved in 10 c.cm. of sterile water or 5 per cent. glucose solution, the dose is increased by half a grain at a time till 2 or  $2\frac{1}{2}$  grains are being given and a total amount of at least 30 grains for an adult reached. Coughing during an injection

does not indicate that the limit of toleration for a single dose has been attained. If the vein lumen is not properly entered and the solution mingles with the tissues severe inflammation and necrosis will be caused.

The risks of intravenous medication are avoided by using the newer drug fuadin or neo-antimosan. It is a 6·3 per cent. solution of antimony-pyrocatechin-disulphonate of sodium, and it possesses the advantage of being given intramuscularly. The average course for a man consists of ten doses 1·5 c.cm., 2·5 c.cm., and then eight doses of 5 c.cm., the first three doses to be given on successive days and the remainder every second day. Dosage for women and children is correspondingly reduced.

Potassium antimonyltartrate given intravenously as described above is also specific in granuloma inguinale, but a much larger total in grammes is usually required for a satisfactory result.

#### DRUGS USED IN TREATMENT OF LEISHMANIASIS

Given intravenously in sterile water or in 5 per cent. sterile glucose solution, potassium antimonyltartrate or sodium antimonyltartrate were formerly much used in treating kala-azar, a total course of 40 to 60 grains being needed, and given by a series of injections as already described. Now these drugs are superseded by the pentavalent preparations of antimony, as they are quicker and as effective in action and the patient's time under treatment is greatly reduced. The importance of this can be appreciated abroad where all the infected coolies on an estate can be given a good course of treatment in perhaps fourteen days. Many of these compounds have been used in the hospital, such as stibacetin, stibosan or von Heyden 471, stibenyl, neostam and neostibosan. At present neostam and

neostibosan are most frequently used.

*Neostam* (the nitrogen-glucoside of sodium p-amino-phenylstibinate) is given intravenously in doses of 0·1 gramme to 0·2 gramme every second day until a total of 3 grammes is attained. Its toxicity is not more than 1/20th of sodium antimonyltartrate, and it can be given intramuscularly in children. *Neostibosan* (di-ethyl-amino-p-amino-phenyl-stibinate), also like *neostam*, is given dissolved in sterile water (usually 10 c.cm.) by the intravenous route, on alternate days. The initial dose of 0·1 gramme is increased up to 0·3 gramme till 2·5 grammes or more has been reached. Doses of 0·3, rising to 0·5 gramme have been given in intensive courses of eight days, the drug being injected each day, but there is evidence that the best results are attained by maintaining 0·3 gramme as the optimum dose (Napier). The reduction of toxic effects gained by the use of these newer compounds is important, as giddiness, nausea, vomiting, hepatitis, and jaundice may follow the administration of antimony in certain individuals. An anaphylaxis-like condition with collapse has been reported as having occurred.

#### DRUGS USED IN WORM INFECTIONS

The drugs most frequently used are santonin, carbon tetrachloride and oil of chenopodium. Thymol and B-naphthol are occasionally tried. For ascariasis, santonin is an old favourite in doses of 3 to 5 grains given on consecutive days, combined with preliminary starvation and followed with magnesium or sodium sulphate in  $\frac{1}{2}$  to 1 oz. doses. For both ascariasis and ankylostomiasis carbon tetrachloride and oil of chenopodium are used, either separately or in combination. Methods are as follows :—

- R Capsule of carbon tetrachloride - - 30 minims at 7 a.m.  
 " " " " - - 30 minims at 7.30 a.m.  
 Sulphate of sodium - - -  $\frac{1}{2}$  oz. to 1 oz. at 9 a.m.  
 followed by enema later.

The patient is given calcium and glucose by the mouth on the previous day, and no alcohol is allowed before or after treatment. The drug is contra-indicated in patients who have a history of alcoholism. It has a poisonous effect on the hepatic cells. Preliminary starvation is not recommended. This drug was first tried as an anæsthetic, then had a vogue as a dry shampoo (deaths occurred), and has now established itself as an anthelmintic.

- R Capsule oil of chenopodium - - - 8 minims at 6 a.m.  
 " " " - - - 8 minims at 7 a.m.  
 " " " - - - 8 minims at 8 a.m.  
 Sulphate of sodium - - -  $\frac{1}{2}$  to 1 oz. at 9 a.m.  
 followed by an enema a few hours later.

After partial protein starvation and glucose medication the drugs are often given in combination in capsules as follows :—

- R Carbon tetrachloride - - - 40 to 45 minims  
 Oil of chenopodium - - - 10 to 15 minims

Divide into two doses and give at quarter- or half-hourly intervals and follow with magnesium sulphate,  $\frac{1}{2}$  to 1 oz., in a quarter or half an hour.

Filix mas is still most commonly used for tape-worm infection. After preliminary starvation for three days on  $3\frac{1}{2}$  pints of milk it is administered as follows :—

- R Extract of filix mas - - - 30 minims  
 in capsule at 8 a.m.  
 " " " - - - 30 minims  
 in capsule at 8.30 a.m.  
 " " " - - - 30 minims  
 in capsule at 9 a.m.  
 Sulphate of sodium - - -  $\frac{1}{2}$  to 1 oz.  
 at 11 a.m.

Followed by an enema a few hours later.

In resistant cases the above can be strengthened by

giving a fourth capsule of minims 30 of the filix mas or a capsule of oil of turpentine, minims 30, at 9.30 a.m. and delaying the salts till 11.30 a.m. No castor oil should be given as felicic acid is soluble in it and toxic symptoms are attributed to its absorption. It will be noted that enemas are administered after all these treatments. This is to ensure the elimination of the large doses of the drugs given.

#### DRUGS USED IN DYSENTERY

In amoebic dysentery emetine in various forms is still much used. Hydrochloride of emetine 1 grain may be given intramuscularly for six nights followed by :—

R	Ipecac. powder	-	-	-	-	20 or 30 grains
	Tannic acid	-	-	-	-	10 grains

Given in cachets each night for another six nights this avoids the nausea and vomiting which too often accompany the following method :—

After a light last meal at 6 p.m. emetine-bismuth-iodide 1 grain increasing to 3 grains in a gelatin capsule is given at 10 p.m. To avoid the nausea and vomiting which the drug causes, tincture of opium in 10- or 15-minim doses is often administered at 9.15 p.m. in the hope of ensuring sleep. A course of ten or twelve nightly doses is usual, but weakness or irregularity of the pulse indicates that treatment is too vigorous, and the drug should be temporarily suspended.

A less nauseous drug is emetine periodide, which is given in capsules containing grains 2 three times daily, after food, for ten days. The action of the drug is stated to be more effectual if tablets of *fel bovinum* are given at the same time.

Yatren 105 is 7-iodo-8-oxyquinoline sulphonic acid. This effective substance is now in constant use. One to two pills (grains 4 to 8) taken three times daily, after food, for eight or ten days, are supplemented by rectal injections of a 2.5 per cent. solution of the drug. A



venously. For the anæmia of sprue liver soup has always been used in the Hospital for Tropical Diseases, and its value in this disease has been recognized for over thirty-five years by practitioners in tropical medicine. The original recipe for the liver soup is as follows :—

R. Calves' liver	-	-	-	-	-	$\frac{3}{4}$ lb.
Water	-	-	-	-	-	1 quart.
Sago	-	-	-	-	-	1 tablespoonful.
Salt	-	-	-	-	-	A little.

Cut the liver small, put into cold water, bring to the boil and skim. Add the sago and salt, boil slowly for three hours. Strain. The soup must be made fresh each day.

A more modern recipe is the following :—

Take  $\frac{7}{8}$  lb. of calves' liver, cut into small squares and add  $1\frac{1}{2}$  pints of water. Bring to the boil. Skim off all whitish froth and simmer for one hour. Strain it and add one teaspoonful of marmite, well stirring all the time. Serve hot.

The fact that liver soup has been used for so long in tropical practice is very interesting in view of the comparatively recent development of liver therapy in pernicious anæmia due to the work of Minot and Murphy in America.

THE PHARMACOPŒIA OF ST. JOHN'S  
HOSPITAL FOR DISEASES OF THE SKIN

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THE earliest Pharmacopœia of St. John's Hospital which I have been able to obtain was published in 1898, and is a more bulky book than either of its successors of 1912 or of 1926. Another revision which does not differ appreciably in size from the one published in 1926, is in the press. One of the most notable differences is in the number of mixtures; in 1898 there were 37 mixtures, in 1912 the number was reduced to 31, in 1926 to 21, and in the forthcoming revision the number rises to 27, but this increase is largely due to an increase in the number of the honorary staff of the hospital, each member naturally ordering his own particular prescriptions. It cannot be taken to indicate any retrograde step towards a belief in the "humoral" cause of skin diseases.

Another noticeable change is in the number of *balnea* or *medicated baths*; in 1898 these were 8, but by 1912 they were reduced to 4, at which number they have remained. Of these two only, the *Balneum alkalinum* and the *Balneum furfuris* are used at all frequently. Quite rightly the sulphur bath has disappeared as it was always far more effective in causing sulphur dermatitis than in curing scabies. Strange to say, it is still used by certain public authorities. The medicated vapour baths of 1898 have completely disappeared,

chiefly because they were found to be both an unreliable and an irritating method of using the particular drug. It is so much more satisfactory to inject a measured amount of mercury into the gluteal muscle than to irritate the whole skin, and still have a very remote idea of how much mercury has been absorbed.

*Caustics*, as such, too, have disappeared, though Liq. hydrarg. acid. nitratis is still the most popular in the treatment of lupus vulgaris. The solid stick of silver nitrate "lunar caustic" still has many valuable uses, but the modern treatment of neoplasms with radium and X-rays, of lupus with ultra-violet light from various sources, and of warts and similar tumours by various electrical methods, has done away with the necessity for many of the drastic, it might almost be said barbarous, methods of our ancestors.

One very useful addition, made in 1926 and retained, is the Cataplasma amyli for the making of which Sir Norman Walker gives such clear directions. It is a remedy which is far too little used, probably as it is too little known. It is certainly one of the very safest remedies to apply to an inflamed, weeping or crusted surface and many cases of infantile eczema can be completely healed by its continued use alone.

The *creams* appear under that name in 1926, though the calamine cream has reverted to its original name of Linimentum calaminæ. It appears in the National Formulary as the Lotio calaminæ oleosa, though the consistency of it is really that of a cream. Cream applications are far less frequently used in general practice than their special virtues call for. They make a very excellent half-way house between a lotion, which so often proves drying as used by a patient who can only change his dressing morning and evening, and an ointment, which proves irritating to an inflamed,

weeping or crusted surface. The ointment acts as a more or less waterproof covering, prevents evaporation and dams back the exuding serum, and many acute eruptions would be checked in their earlier stages by the use of a simple cream. The *Cremor zinci* is an excellent formula, as follows :—

R	Zinci oxidi	-	-	-	-	-	180 grains
	Lanolini	-	-	-	-	-	240 grains
	Ol. olivæ	-	-	-	-	-	} of each
	Liq. calcis	-	-	-	-	-	
							1 ounce

Using this as a base 10 minims of ichthammol, or liq. picis carbonis may be added so as to exert a more antipruritic effect.

*Plasters* number eight as compared with ten in 1898 but by far the most commonly used are varying strengths of salicylic acid for macerating horny excrescences, such as warts and corns, and salicylic acid combined with creosote which is chiefly used in the treatment of warty tuberculosis (*verruca necrogenica*).

The *gargles* have been reduced from four to two, chiefly because practitioners, and sometimes patients, are more discriminating in their choice of hospitals, and diseases of other systems of the body are seldom seen at a hospital primarily intended for diseases of the skin.

Unna's zinc gelatin is still retained (combined with ichthyol) as, in spite of the great influx of ready-made bandages, it still remains the best supporting application for many cases of varicose eczema and its frequently associated ulceration. As a protective or "occlusive" application in many chronic itchy and "lichenified" patches and even in self-produced or artefact eruptions, Unna's dressing is invaluable. In the National Formulary it is called *Gelatinum zinci* (Unna's paste).

The sclerosing treatment of varicose veins, which

really owes its great modern impetus to the shortage of men in the French army about 1915, is responsible for the appearance of the *Injectio quininæ et urethanae*. Opinions still vary greatly as to the efficacy of the various sclerosing fluids which can be used for the injection of varicose veins, but the majority of the staff at St. John's Hospital were of the opinion that quinine-urethane had more advantages than disadvantages, and so it was the one selected for inclusion in our *Pharmacopœia*.

Only two *liniments* appear in the latest *Pharmacopœia*, of which *Linimentum calaminæ* (which is the *Lotio calaminæ oleosa* of the National Formulary and of many other hospital pharmacopœias) is the chief. So many commercial firms put up an excellent preparation of this that it is seldom necessary to write the prescription for it, but the one given here makes up very well. It is :—

R	Calaminæ	-	-	-	-	-	40 grains
	Zinci oxidi	-	-	-	-	-	20 grains
	Liq. calcis	-	-	-	-	-	} of each
	Ol. sesami	-	-	-	-	-	
							½ ounce

It may be used as a base for many other medicaments, and is undoubtedly the chief, if not the only, constituent of most of the "beauty parlour" preparations sold under the enticing names of "foundation lotion" and other similar titles. The *Linimentum acid. salicylic. co.* is a most useful application for mild cases of dandruff or *pityriasis sicca* and is also mildly stimulating for *seborrhœic* types of *alopecia* :—

R	Acid. salicylic.	-	-	-	-	-	25 grains
	Alcohol. (60 per cent.)	-	-	-	-	-	} 60 minims
	Ol. ric.	-	-	-	-	-	
							to 1 ounce

For use in private practice the not very pleasant odour of the castor oil may be masked by a few drops

of oil of lavender or rosemary.

### LOTIONS

The lotions show a rather striking increase in number, as in 1898 there were 18 and now there are 28. This increase is partly due to listing small variations as different lotions, as, for example, *Lotio calaminæ cum pice*, which is calamine lotion with the addition of liquor picis carbonis, 8 minims to 1 ounce. The world-famous calamine lotion, like the liniment, is now put up so well by so many firms that writing of the detailed prescription is seldom called for. The formula favoured at St. John's is :—

R	Calaminæ prep.	-	-	-	-	-	of each
	Zinc. oxidi	-	-	-	-	-	20 grains
	Glycerini	-	-	-	-	-	30 minims
	Liquoris calcis	-	-	-	-	-	300 minims
	Aquam destillatam	-	-	-	-	-	to 1 ounce

It also masquerades under various attractive names of which "sunburn lotion" is one of the most popular. A very effective, though apparently not widely known, value of calamine lotion is its mildly antiseptic and drying effect on the lesion of impetigo contagiosa.

Here it may be noted is the excellent *Lotio d'Alibour* or *Lotio cupri et zinci sulphatis* which is also in the National Formulary, and is very effective in the treatment of impetigo. The formula is :—

R	Cupri sulphatis	-	-	-	-	-	4 grains
	Zinci sulphatis	-	-	-	-	-	6 grains
	Aquam camphoræ	-	-	-	-	-	to 1 ounce

A very useful lotion for the treatment of *acne vulgaris* is the *Lotio calaminæ cum sulphure*, which contains 10 gr. of sulphur to the ounce of calamine lotion and is usually quite as efficacious as the *Lotio sulphuris et zinci*, the formula for which is :—

R	Sulphuris præcipit.	-	-	-	-	} of each 15 grains
	Zinci sulphatis	-	-	-	-	
	Potassii sulphidi	-	-	-	-	
	Aquam destillatam	-	-	-	-	
						to 1 ounce

Soothing and cooling lotions are well represented by the Lotio picis carbonis, the Lotio plumbi acetatis and the Lotio plumbi c. zinco, though it is noticeable that the Lotio picis et plumbi of the National Formulary does not find a place.

For the promotion of hair growth on the scalp the Lotio stimulans is the result of prolonged experience and the formula is :—

R	Tinct. cantharidis	-	-	-	-	30 minims
	Liquoris ammoniæ fortis	-	-	-	-	60 minims
	Glycerini	-	-	-	-	60 minims
	Aquam destillatam	-	-	-	-	to 1 ounce

If dandruff or a seborrhœic condition of the scalp calls for attention the Lotio resorcini is very serviceable, while the Lotio hydrargyri et resorcini has stood the test of time :—

R	Hydrargyri perchloridi	-	-	-	-	1 grain
	Resorcini	-	-	-	-	5 grains
	Olei ricini	-	-	-	-	10 grains
	Alcohol (60 per cent.)	-	-	-	-	to 1 ounce

#### MIXTURES

Of the mixtures, the number of which as already mentioned has risen again to 27, Mist. alba is as popular in the treatment of skin conditions as in most other branches of the healing art. In fact there are few diseases in which its judicious use is not beneficial. Arsenic, which at one time was regarded almost as a dermatological "cure-all" is present in three prescriptions, the Mistura acidi arseniosi, the Mistura arsenicalis alkalina, and the Mistura ferri arsenicalis. Though it is still of value in certain diseases associated

with derangement of the normal process of the formation of horn cells, such as psoriasis, it is far more frequently used for its general tonic properties. The unfortunate results which may still sometimes be seen from its too prolonged ingestion have led in some cases to its too complete abandonment, but there can be no doubt that, used in moderation, it is a most valuable drug. Quinine is a remedy favoured by many in certain dermatoses, particularly lupus erythematosus and the *Mistura quininae acida* is a very useful variation from the plain quinine tablets. Many cases of seborrhœic dermatitis are benefited by the administration of alkalis and the following *Mistura alkalina* is a very useful prescription :—

R	<i>Sodii bicarbonatis</i>	-	-	-	-	30 grains
	<i>Potassii bicarbonatis</i>	-	-	-	-	25 grains
	<i>Potassii citratis</i>	-	-	-	-	20 grains
	<i>Tinct. card. co.</i>	-	-	-	-	30 minims
	<i>Aquam</i>	-	-	-	-	to $\frac{1}{2}$ ounce

For the relief of irritation, which is often such a difficult problem in dermatological treatment, the *Mistura potassii bromidi* may be valuable, though a suitable external application is usually more effective, and the bromide mixture is more useful in soothing the exhausted nervous system than in directly affecting the itching cutaneous covering. The *Mistura nucis vomicæ sedativa*, which appears in the London Hospital Pharmacopœia as the *Mist. pot. brom. co.* or “anti-climacteric mixture,” is a most valuable remedy for the “nervous depression” so common in older patients suffering from an intermittently itching condition. It is often seen at its best in cases of senile pruritus and the formula is as follows :—

R	<i>Potassii bromidi</i>	-	-	-	-	10 grains
	<i>Tincturæ nucis vomicæ</i>	-	-	-	-	10 minims
	<i>Spirit. ammoniæ aromatici</i>	-	-	-	-	20 minims
	<i>Infusum gentianæ</i>	-	-	-	-	to $\frac{1}{2}$ ounce



For the treatment of rosacea, with its usually attendant gastric disturbances, there are two acid mixtures. The simple *Mistura gentianæ acida* is practically the same in all pharmacopœias, and the *Mistura acida strychninæ* is preferable in cases of lack of general tone, as follows :—

R	<i>Acidi nitro-hydrochlorici dilut.</i>	-	-	5 minims
	<i>Liquoris strychninæ hydrochloridi</i>	-	-	2 minims
	<i>Aquam destillatam</i>	-	-	to ½ ounce

The *Mistura hydrargyri perchloridi* is a mixture much favoured in the treatment of lichen planus and of necessity the *Mistura hydrargyri biniodidi*, as follows :—

R	<i>Liquoris hydrargyri perchloridi</i>	-	-	30 minims
	<i>Potassii iodidi</i>	-	-	5 grains
	<i>Infusum quassiæ</i>	-	-	to ½ ounce

is invaluable in dissolving the granulomas of tertiary syphilis.

Antimony wine does not appear to enjoy the popularity it deserves and the judicious use of the *Mistura vini antimonialis* in the early or eruptive stages of many inflammatory diseases, such as psoriasis or lichen planus, will give very gratifying results. The formula :—

R	<i>Magnesii sulphatis</i>	-	-	20 grains
	<i>Vini antimonialis</i>	-	-	10 minims
	<i>Aquam destillatam</i>	-	-	to ½ ounce

Salicin and sodium salicylate are both very useful in relieving the joint pains associated with certain skin diseases such as erythema nodosum, peliosis rheumatica and certain types of psoriasis and each is prescribed in a familiar mixture :—

R	<i>Salicini</i>	-	-	15 grains
	<i>Pulveris tragacanthæ</i>	-	-	q.s.
	<i>Aquam chloroformi</i>	-	-	to 1 ounce
R	<i>Sodii salicylatis</i>	-	-	10 grains
	<i>Sodii bicarbonatis</i>	-	-	10 grains
	<i>Aquam menthæ piperitæ</i>	-	-	to ½ ounce

No pharmacopœia would be complete without the appearance of calcium, though it is open to grave doubt whether such a simple prescription as the following is at all an effective way of administering this drug.

R    Calcii lactatis    -    -    -    -    -    20 grains  
       Aquam menthæ piperitæ    -    -    -    -    to 1 ounce

This is necessarily a somewhat sketchy account of the internal remedies in our Pharmacopœia, but it will emphasize the well-known fact that there are really no specific internal remedies for skin diseases. The increasing modern favour for the administration of drugs by injection, also has had its effect.

#### PASTES

Returning to the forms in which external remedies may be applied there are in the first place the extremely valuable pastes. These are semi-porous applications made by the addition of a quantity of some bland absorbent powder to the ointment basis and are less irritating than ointments as the powder absorbs the discharges. Pastes may be said to combine the effects of an ointment and a powder. They should be applied to the skin either by being rubbed in or by being spread on linen or muslin and held in position by a bandage. Should they become caked over the skin, they may be removed by olive oil, and they are not suitable for use on hairy parts as they are apt to mat the hairs together or to plaster them down to the skin. The classical example is the Pasta zinci with which the name of Lassar is always associated. It is :—

R	Zinci oxidi	-	-	-	-	-	} of each equal parts to make 1 ounce
	Amyli	-	-	-	-	-	
	Adipis lanæ hydrosi	-	-	-	-	-	
	Paraffinum molle	-	-	-	-	-	

As Sir Norman Walker remarks : “ It is interesting to note that Erasmus Wilson, to whom the popularity

of zinc ointment is due, used to vary the amount of zinc oxide in his prescription, and his 'stiff' zinc ointment was really the pioneer of the pastes." Any drug may be incorporated in this paste, the amount of powder being diminished if the added constituent is bulky and dry. Salicylic acid is frequently added for its softening effect on the horny layer of the epidermis, and the prescription for the *Pasta acidi salicylici* as it is then called becomes :—

R	Acidi salicylici	-	-	-	-	10 grains
	Zinci oxidi	-	-	-	-	120 grains
	Amyli	-	-	-	-	120 grains
	Paraffinum molle	-	-	-	-	to 1 ounce

To this may be added 60 minims of *Liquor picis carbonis* if a more anti-pruritic effect is desired. If the effect wished for is more antiseptic the *Pasta monsol* (15 min. monsol to the ounce of *Pasta zinci*) will be found most useful.

The *Pasta resorcini* co. is used in its three increasing strengths for its desquamating effect in the "peeling" treatment of *acne vulgaris* and the prescriptions are as follows :—

R	Resorcini	-	-	-	10 grains	30 grains	60 grains
	Sulphuris precipitati	-	-	-	10 grains	30 grains	60 grains
	Zinci oxidi	-	-	-	180 minims	180 grains	120 grains
	Paraffinum molle	-	-	-	to 1 ounce	to 1 ounce	to 1 ounce

*Pigmenta or paints* are employed either as a vehicle for various drugs in a spirituous solution or as a protective coating. The *Pigmentum viride* is a very popular example of the former and is largely used in the treatment of superficial pus infection of the skin. It is also effective in the ringworm infection between the toes which goes by various names, such as "athlete's foot," "Hong Kong foot" and "Bombay rot." The prescription is :—

R	Viridis malachiti	-	-	-	-	5 grains
	Hydrargyri perchloridi	-	-	-	-	5 grains
	Alcohol. (60 per cent.)	-	-	-	-	360 minims
	Aquam	-	-	-	-	to 1 ounce

For the combination of a drug with a protective covering the *Pigmentum acidi salicylici* is a good example, as follows:—

R	Acidi salicylici	-	-	-	-	1 drachm
	Collodium flexile	-	-	-	-	to 1 ounce

The addition of 20 minims of the extract of *cannabis indica* makes the very familiar “corn paint.”

Of *pills* very much the same may be said as of mixtures. They are of value in treating such conditions as may co-exist with the skin disease and none are specifics though the *Pilula hydrargyri iodidi viridis* sometimes seems to affect warts like the proverbial charm and the *Pilula ichthyol.* is said to reduce cutaneous congestion and is often employed in the treatment of *rosacea* when acids appear to fail.

#### POWDERS

Dusting powders are most valuable and they may be used for their protective, absorbent, astringent, anti-pruritic and antiseptic properties. They should be carefully prepared and repeatedly sifted so that they are practically impalpable and wholly free from grit. Their protective effect is largely due to their acting as a “dry lubricant” (like graphite in certain parts of machinery) and for this action the many talcum powders on the market are excellent. In fact the bulk manufacture of these powders is so good nowadays that individual prescribing is seldom necessary. Powders may be simply dredged on to the affected surface or if a more prolonged action is required they may be quilted into muslin bags and fixed with a bandage. For an acutely inflamed surface they have

a most cooling effect as each particle helps to radiate the heat, and on an oozing or weeping surface the absorbent powers are of value in drying the skin and reducing œdema. In this latter connection starch powders should not be recommended as the starch is liable to cake and ferment. The stearate of zinc is a better powder for this purpose. The simple Pulvis acidi borici cum zinco combines the protective and antiseptic properties very well as follows:—

R	Pulveris acidi borici	-	-	-	-	1 part
	Pulveris amyli	-	-	-	-	2 parts
	Zinci oxidi	-	-	-	-	3 parts

A rather more antiseptic powder which is also mildly astringent is the Pulvis acidi salicylici compositus:—

R	Acidi salicylici	-	-	-	-	3 parts
	Pulveris amyli	-	-	-	-	10 parts
	Pulveris talci	-	-	-	-	87 parts

whilst if antiseptis is the chief object the Pulvis hydrargyri subchloridi compositus may be used:—

R	Hydrargyri subchloridi	-	-	-	-	2 parts
	Pulveris acidi borici	-	-	-	-	} of each
	Pulveris amyli	-	-	-	-	
						7 parts

When the astringent and antipruritic effect is the chief one sought the subgallate of bismuth, marketed under the trade name of “dermatol,” will be found very suitable.

The hopelessness of competing with the myriads of excellent *soaps* on the market is reflected in the fact that only three formulæ are given. Far too much is made of the alkali in soap to the neglect of its other constituents. When any soap is mixed with water a certain amount of alkali is of necessity set free, and it is to that that the cleansing effect of the soap is largely due. Probably most of the irritation caused

by soaps is due to the unsuitable rancid fats used in their preparation or to the perfume and dyes, and it must always be remembered that idiosyncrasy plays a large part in the irritation of soaps. "One man's cleanliness may be another man's irritation."

*Medicated soaps* sound most attractive but in practice they really have very little specific value. They do not carry the drug with them as ointments do and their dose is completely uncertain. In acne vulgaris, however, a sulphur soap is often quite useful, especially as it may be the only form of treatment that male patients will carry out with any degree of regularity. Still, even here, the chief effect is probably due to the soap rather than its accompanying drug.

The *Solutio saponis* (equal parts of *sapo viridis* and alcohol or scented with 15 gr. of thymol ad 1 oz.) is a very useful shampoo.

#### OINTMENTS

Ointments are by far the most commonly used of the greasy preparations and are often the most efficacious method of acting on the skin by means of various drugs. The choice of a proper base is most important and it is of great interest to note that vaseline (*paraffinum molle*) has very largely replaced lard or benzoated lard in the latest pharmacopœia. In fact it is the base used in 33 out of the 43 formulæ given whereas in 1898 about an equal number of ointments were made up with lard and with vaseline. This is largely explained by the comparative cheapness of vaseline as well as the fact that it does not go rancid. Vaseline may prove irritating to sensitive skins when other bases may be used. It may also be combined with lanoline (*adepts lanæ*) to give greater consistence.

Ointments may be bland or protective, astringent,

keratolytic, antiseptic, stimulating, or sedative. The effect will vary according as they are rubbed in, smeared on, or applied thickly on linen with or without a waterproof covering. Needless to say the last method produces the most powerful effect. Simple bland or protective ointments nearly all contain zinc oxide and may easily be rendered mildly sedative by adding 10 to 15 minims of liq. picis carbonis or 1 drachm of liq. plumbi subacet. fort. as in the following :—

R	Liquoris plumbi subacetatis diluti	-	60 minims
	Unguentum zinci	- - -	to 1 ounce

The combination of mild antiseptics in a mildly sedative ointment is well exhibited in the following Unguentum acidi borici cum eucalypto :—

R	Acidi borici	- - - -	1 grain
	Olei eucalypti	- - - -	10 minims
	Paraffinum molle	- - - -	to 1 ounce

which will frequently be found to be a very “healing ointment.” This ointment is very similar in its effect to the Ung. Z.E.B. of the National Formulary.

The chief keratolytic ointments contain salicylic acid in varying strengths and may with advantage be combined with drugs of the “reducing agent” type such as chrysarobin or mercury in the treatment of psoriasis. The Unguentum petrol. compositum c. acid. salicylic. is one of the most used formulæ for psoriasis :—

R	Liquoris picis carbonis	- - -	60 minims
	Hydrargyri ammoniati	- - -	15 grains
	Acidi salicylici	- - -	20 grains
	Unguentum paraffini	- - -	to 1 ounce

The combination of benzoic acid with salicylic acid (known the world over as Whitfield’s ointment) is a powerful antiseptic as well as keratolytic and remains

the best remedy for tinea infection of the glabrous skin, in spite of countless rivals of the aniline dye and other types of chemical. Whitfield's original prescription is closely followed and it is to be noted that coconut oil is included in the base :—

R	Acidi benzoici	-	-	-	-	25 grains
	Acidi salicylici	-	-	-	-	15 grains
	Paraffini mollis	-	-	-	-	120 grains
	Olei cocois nuciferæ	-	-	-	-	to 1 ounce

Two ointments are included which are very effective in treating seborrhœa, particularly of the scalp. The Unguentum acidi salicylici cum sulphure is best when there is little inflammatory reaction and its action on seborrhœic dermatitis of the body is most successful :—

R	Acidi salicylici	-	-	-	-	10 grains
	Sulphuris præcip.	-	-	-	-	15 grains
	Adepim benzoïnatum	-	-	-	-	to 1 ounce

When there is considerable inflammatory reaction with much crusting of the scalp the Unguentum cocois compositum will frequently give better results :—

R	Liq. picis carbonis	-	-	-	-	60 minims
	Sulphuris præcipitati	-	-	-	-	20 grains
	Acidi salicylici	-	-	-	-	10 grains
	Olei lavandulæ	-	-	-	-	q.s.
	Olei cocois nuciferæ	-	-	-	-	to 1 ounce
The addition of 2 per cent. oil of cade will add to its sedative effect.						

The Unguentum acidi carbolici c̄ menthol. is an excellent one for relieving irritation and the pain of ulcers, but it must always be borne in mind that the action of ointments of this type is always temporary and the irritation is very apt to return with renewed force when the first effect of the application has "worn off." The same comment applies to the very effective proprietary ointment known as "percainal." The formula of our hospital ointment is :—



R	* Acidi carbolic	-	-	-	-	10 grains
	Menthol.	-	-	-	-	5 grains
	Zinci oxidi	-	-	-	-	30 grains
	Adepim benzoinat	-	-	-	-	to 1 ounce

Another useful antipruritic is the Unguentum naphthol, which has also the virtue of being an anti-scabies application. Its use is often very valuable in cases of papular urticaria, when the possibility of an added scabies infection may be difficult to exclude :—

R	Naphthol.	-	-	-	-	22 grains
	Olei sesami	-	-	-	-	360 minims
	Paraffini duri	-	-	-	-	30 grains
	Paraffinum molle	-	-	-	-	to 1 ounce

In this summary of our “ Favourite Prescriptions ” I have tried to indicate what sort of application has been found by experience to be most suitable to the different stages of skin diseases. It will be seen that many of the more modern and specialized medications, such as the various preparations of the gold salts, are not included. These medicaments are still rather *sub judice* both as to the indication for their use, their dosage and effects, and it was felt the time had not yet come for their inclusion in the Hospital Pharmacopœia. The large firms of manufacturing chemists now put up so many of these applications in a so much more elegant form and of necessity less expensively than by the dispensing of small quantities that the art of writing elegant prescriptions is unfortunately likely to fall more and more into disuse.

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## XVII

# THE PHARMACOPŒIAS OF THE LONDON THROAT, NOSE AND EAR HOSPITALS

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IN this article the remedies of general medicine will be omitted from consideration in order to deal exclusively with special formulæ. For this purpose the principal authorities are two separate publications, the more senior from the Throat Hospital, Golden Square, first compiled by Sir Morell Mackenzie something like sixty years ago, being now in its eighth edition, and the other representing the repertory of the Central London Throat, Nose and Ear Hospital. The third throat, nose and ear hospital in London, the Metropolitan, has never published its pharmacopœia, which exists in typescript only, and the Royal Ear Hospital has been amalgamated for some years with University College Hospital, with the pharmacopœia of which hospital its own is incorporated.

In running the eye over the three or four hundred prescriptions in these pharmacopœias, the reader may be struck here and there by the long-continued popularity of certain combinations on the one hand, and, on the other, by the occasional appearance of what looks suspiciously like "dead wood" to the modern observer. As a matter of fact, every hospital pharmacopœia contains ancient and even antiquated formulæ at which the junior out-patient physician may be inclined to scoff. A little experience will soon teach

him, however, to have more respect for old-fashioned remedies, since they continue to be the hope, stay and comfort of many a grateful patient.

A comparison of the two oto-laryngological pharmacopœias is interesting and in some respects rather amusing. How is the curious fact to be explained, for example, that Golden Square offers a choice of *trochisci* or sweetmeats, the preparation of which is detailed with the most careful precision, in no fewer than fifteen different varieties, while the (apparently more austere) Central London Hospital limits its patients to four only? If this indicates the presence of "dead wood" in the older compilation, there is also a dry and withered branch in the other, where the *Injectio pilocarpinæ hypodermica* still holds pride of place, although I have only known one otologist who was accustomed to use it. He believed it was occasionally successful in certain forms of labyrinth deafness. In this connection may be mentioned a special mixture which has been found to bear out the promise of the older school of practitioners. It consists in the frequent administration of small doses of tincture of aconite with the object of aborting a quinsy. It still figures in the "Central" hospital pharmacopœia, one minim to be given every quarter of an hour for four doses. Another prescription not in the collection, which has been found both safe and serviceable, is:—

R	Tincture of aconite	.	.	.	.	1 minim
	Antipyrin	.	.	.	.	1 grain
	Caffeine citrate	.	.	.	.	5 grains
	Water	.	.	.	.	to 1 ounce

Sig. Two tablespoonfuls every hour for eight hours.

To see a lively peritonsillar inflammation subside and disappear in a few hours under its influence teaches some respect for our predecessors. It is not, of course,

invariably successful.

#### SPRAYS AND SOLUTIONS

Oto-rhino-laryngology is only some sixty years old, and it is noteworthy that the *nebulæ* or fine sprays of certain essential oils, such as menthol and oil of eucalyptus, dissolved in an oily medium, which were first introduced by Morell Mackenzie, are still in daily use for nasal and laryngeal catarrhs. A warning may be uttered in passing, that if the solution is too strong it is apt to induce some eczema of the upper lip in nasal application.

The following formula for a sedative spray is taken from the Golden Square collection:—

R	Chloretone -	-	-	-	-	5 grains
	Menthol -	-	-	-	-	3 grains
	Camphor -	-	-	-	-	1 grain
	Oil of cinnamon -	-	-	-	-	2 minims
	Oil of pine -	-	-	-	-	15 minims
	Liquid paraffin -	-	-	-	-	to 1 ounce

In both collections prescriptions for sprays containing cocaine are included, but these should only be used with caution. It is amazing how rapidly the cocaine habit is acquired by certain patients. The addition of adrenaline enhances the value of *nebulæ* in cases of asthma and allergic rhinorrhœa.

Similar, though weaker, solutions of the essential oils (menthol 2 grains to liquid paraffin 1 ounce) are sometimes propelled by a gentle air-blast into the middle ear through the Eustachian catheter and tube. After a prolonged trial of such modern suggestions as iodolysin, fibrolysin, and so on, I have returned to the simple original prescription as the most reliable, provided we are not dealing with one of the more intractable forms of middle-ear deafness.

The *Collunaria*, or solutions for washing out the

nasal cavities—not to be confounded with the *collutaria* or mouth-washes, which, by the way, are absent from the “Central” collection—may now be considered. The douching, syringing, or washing-out of the nose by copious watery solutions, whatever method be adopted, although popular, cannot be said to be free from objection. There is always the danger of the solution, and with it the nasal discharges, finding a way up the Eustachian tube into the middle ear or, for that matter, into a hitherto healthy nasal sinus. The danger may be minimized by using as little force as possible, and by letting the solution, after syringing, spontaneously drip and drain from the nose into a basin before blowing it; and then the blowing should be gentle. Nevertheless, in spite of such drawbacks, the collunaria survive and are likely to go on surviving; they are cleansing and refreshing, as anyone who uses them quickly discovers.

Their constitution varies and the choice is large. Here are two favourite alkaline douches:—

R.	Potassium chlorate	.	.	.	.	$\frac{1}{2}$ ounce
	Sodium biborate	.	.	.	.	$\frac{1}{2}$ ounce
	Sodium bicarbonate	.	.	.	.	$\frac{1}{2}$ ounce
	Sugar in powder	.	.	.	.	1 ounce

and

R.	Sodium bicarbonate	.	.	.	.	2 grains
	Sodium biborate	.	.	.	.	2 grains
	Sodium chloride	.	.	.	.	2 grains
	Water	.	.	.	.	to 1 ounce

These are usually dispensed in the form of powder to be dissolved in water immediately before use.

A third formula, sometimes known as Dobell's solution, is worthy of citation:—

R.	Sodium bicarbonate	.	.	.	.	3 grains
	Sodium biborate	.	.	.	.	3 grains
	Liquid carbolic acid	.	.	.	.	60 minims
	Water	.	.	.	.	to 1 ounce

It is sometimes used as a stronger solution than the above formula. As it combines detergent and anti-septic properties, it is of particular service in ozæna, a disease which, by the way, is much less frequently seen than it used to be thirty years ago. Its treatment by glucose and glycerin is mentioned by one of the pharmacopœias, not by the other.

It will be observed that most of the collunaria are alkaline, but normal saline solution may be employed. Sea-water, or a solution of a similar constitution, is favoured in some quarters, and it certainly liquefies mucous and muco-purulent discharges satisfactorily, but it is not included in either of the pharmacopœias. In this connection a word of warning may again be permitted. In order to provide the necessary seawater, a popular brand of "sea-salt" is sometimes employed, with a most curious and disconcerting result. This salt occasionally harbours the ova of a small but lively crustacean, and they have been known to hatch out in the patient's nose!

A criticism may be made of the absence from both pharmacopœias of some of the more modern collunaria. There is that composed of diluted glycerin of thymol, for example, now official in the B.P., which has earned a deservedly wide popularity in the last ten years. But doubtless the omission will be rectified in future editions. It is always difficult to decide when to insert and when to reject formulæ.

#### DISEASES OF THE EAR

The remedies for diseases of the ear include a large and, on the whole, a useful and trustworthy collection of ear-drops, applicable to many conditions. To enter fully into the various uses to which they are applied would necessitate writing a complete account of all

diseases of the ear that are accompanied by discharge, and only brief allusions can be made to the more common varieties.

It is of the first importance to ascertain the site and origin of a discharge from the ear. Many a case of simple cutaneous eczema of the external auditory meatus has been aggravated and perpetuated by irritating watery or glycerin solutions used as ear-drops. For that reason, to say nothing of many others, an examination of the ear with the auriscope is essential before prescribing drops. As a rough clinical rule, to which there are exceptions in furunculosis of the external meatus and sometimes in cholesteatoma of the middle ear, it is worth remembering that, if discharge from the ear is watery or serous, its probable source is the skin of the external meatus; if purulent, the middle ear.

Every medical practitioner can (and does) syringe out the meatus for impacted wax. Here is a useful prescription for drops to soften, before syringing, what is frequently a hard, almost a stony hard plug. It is included in both pharmacopœias :—

R	Liquid carbolic acid	-	-	-	-	1 minim
	Sodium bicarbonate	-	-	-	-	10 grains
	Glycerin	-	-	-	-	120 minims
	Water	-	-	-	-	to 1 ounce

Even what seems to be simple cerumen, however, may turn out to be something different, which it is dangerous to syringe, namely, cholesteatoma. This is a peculiar disease, usually located in the middle-ear spaces, frequently highly septic and destructive of the bone. Mingled with ceruminous secretion it may resemble a simple ceruminous collection, but it is soft and it emits a characteristically offensive smell, features which distinguish it from the less serious affection. It should not be syringed, but it may be

treated by *Guttæ acidi salicylic. ̄. alcohol.*, as the salicylic acid dissolves the epidermal masses of which it is composed. Unless, however, the practitioner has special otological experience, he will do well in such cases to seek the help of the expert, as operation is often necessary.

This naturally raises the question of whether or not the ear should ever be syringed in ordinary suppuration. Both of the pharmacopœias certainly regard the method as routine practice and provide formulæ for a number of lotions to be used for the purpose. Nevertheless, it is the fact that the older the otologist the less he syringes the ear, even for wax. It is never known where the liquid will penetrate, and disasters do occasionally occur. It is much safer to mop discharge out of the meatus with pledgets of dry wool and to be content with the insertion of ear-drops.

For the same reason, there are many experienced otologists who are apprehensive of the all-popular solution of hydrogen peroxide used as ear-drops. To begin with, it is usually acid, as it ought not to be, and is irritating to the tissues, and there is certainly in its effervescence within the confined middle-ear spaces a risk that it may carry the infection further afield.

Of other ear-drops there may be mentioned first the old and popular *Guttæ glycerin. acid. carbol. dil.* (150 minims to 1 ounce), as, in the absence of eczema of the meatus, they are perhaps the safest and most reliable of all, soothing pain and facilitating the out-flow of discharge, provided always that the external meatus is not stopped with a plug of cotton-wool.

To enter into the indications for the use of the many other ear-drops formulated in the pharmacopœias would occupy too much space, and readers are referred to the textbooks for fuller information. It may be remarked,



however, that for chronic purulent otitis media, alcohol in varying degrees of dilution is the chief standby.

Recognition of the modern method of treating certain forms of suppuration by zinc ionization is manifested in the provision of a formula for the ionizing solution.

Lastly, I am indebted to the Metropolitan Ear and Throat Hospital pharmacopœia for the reminder that apart from ear-drops, dry treatment of the ear, the following powder being insufflated, has recently enlisted many advocates :—

R	Resublimed iodine (crystals)	-	-	3·6 grains
	Boracic acid powder	-	-	to 1 ounce

The iodine crystals are broken down with a few drops of rectified spirit and the boracic powder added gradually; the powder must be kept in a stoppered bottle.

#### PHARYNGEAL AND LARYNGEAL DISEASES

Of gargles there is a large choice, some thirteen or fourteen being mentioned. Most of them are familiar, but neither collection contains the anodyne aspirin gargle (10 grains to 1 ounce of water), so useful after tonsillectomy and other operations on the pharynx.

An old-fashioned but pleasant and acceptable gargle is the following :—

R	Sodium bichlorate	-	-	-	24 grains
	Glycerin	-	-	-	60 minims
	Tincture of myrrh	-	-	-	24 minims
	Water	-	-	-	to 1 ounce

from the Golden Square pharmacopœia.

In the same book a wise hint is given in the remark that gargles can be used “by means of a syringe such as Higginson’s.” I have found this method of great value after tonsillectomy, and after severe operations such as the diathermy removal of cancerous growths of the pharynx. The patient lies on his side and the

nozzle of the syringe is placed at the angle of the mouth.

Turning now to laryngeal remedies, the comfort imparted by steam inhalations (*vapores*) in the various forms of acute laryngitis is well known. The most popular ingredient of the inhalation is Friar's balsam, but several other soothing medicaments are available. It is always advisable to combine the active agent or agents in the hot water with Pulv. magnes. carb. lev. so as to facilitate its vaporization, and readers may be reminded that the hot water should approximate to, but not reach, the boiling-point, as thereby more steam is obtained.

For the more chronic forms of pharyngitis and laryngitis there exist a number of *pigmenta*, all of which are serviceable. It would appear that this method of treating these mucous surfaces enables them to be influenced for good in quite a remarkable fashion. Many of the *pigmenta* may be entrusted to the patient to apply himself. A few of the more powerful may be detailed. Here is the well-known Mandl's paint :—

R	Iodine	-	-	-	-	-	6 grains
	Potassium iodide	-	-	-	-	-	20 grains
	Oil of peppermint	-	-	-	-	-	5 minims
	Glycerin	-	-	-	-	-	to 1 ounce

Zinc chloride is also an effective local remedy :—

R	Zinc chloride	-	-	-	-	-	10 to 30 grains
	Hydrochloric acid	-	-	-	-	-	1 minim
	Glycerin	-	-	-	-	-	30 minims
	Distilled water	-	-	-	-	-	to 1 ounce

Finally, there is :—

R	Menthol	-	-	-	-	-	60 grains
	Liquid paraffin (or olive oil)	-	-	-	-	-	to 1 ounce

Menthol is sometimes made up with glycerine and rendered more astringent by the addition of liquor ferri perchlor. I have heard that in certain clinics

this combination goes by the name of "Pigmentum Melbæ," and is a great favourite with professional singers.

#### LOCAL ANÆSTHETICS

A few remarks on local anæsthetics may be made in conclusion, as they are in daily use in oto-laryngology. The pharmacopœias give a choice of anæsthetic solutions of which at once the most powerful, reliable and dangerous is cocaine. In order to avoid unhappy accidents with this agent the following precautions should be taken:—(1) cocaine solutions should be coloured; (2) cocaine, whether in solution or in powder, should never be used alone, but always in combination or in conjunction with fresh adrenaline solution; (3) painting the pharynx with even weak solutions of cocaine should be sparingly practised, and the patient should be warned not to swallow it; (4) avoid excess of the solution on the applicator; (5) cocaine solutions should *never* be injected, one of the other local anæsthetics being substituted for it; (6) toxic phenomena should be watched for and promptly treated.

## XVIII.

# THE NATIONAL FORMULARY FOR NATIONAL HEALTH INSURANCE PURPOSES

By E. LEWIS LILLEY, M.B., F.R.C.S.

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Leicester Local Medical Committee, and Leicester Panel Committee.*

AS has been pointed out in previous articles of this series the history of formularies in this country is concerned in the first place with the production of pharmacopœias by the Royal Colleges of Physicians of London, Edinburgh and Dublin. Later the General Medical Council was allotted the duty of consolidating these books into the form of the British Pharmacopœia. Since its first publication the British Pharmacopœia has steadily diverged from the original plan of a formulary into a collection of standards. By reason of this change of principle the B.P. at each successive revision has ceased to take in new medicaments unless they have reached a stage of reasonably satisfactory standardization, and hence the range of its contents is always considerably narrower than the contemporary practice of the profession. Formularies have therefore still been necessary, and the great teaching hospitals for the convenience of their staff and students generally each produced their own book of prescriptions to which the name pharmacopœia was generally attached.

The National Formulary cannot lay claim to the long and venerable history of the pharmacopœias of the great London hospitals, several of which date back to the middle of the eighteenth century. By the

side of these the National Formulary is a mere infant, although certainly a lusty infant with a circulation which might well be the envy of many of its forbears. Of the first edition just over 42,000 copies were sold, while the second edition has already attained practically the same figure. It has been adopted by all the English Panel Committees except three.

The mode of origin of the National Formulary was widely different from that of the older hospital pharmacopœias. The latter arose in the great teaching hospitals where successive generations of students were taught the arts of prescribing and dispensing. It is sad that these arts were much better taught and more thoughtfully studied in the past than in these present days. In particular the art of dispensing as a part of the medical student's training has deteriorated; the newly-qualified student often has little knowledge of the practical side of prescribing and dispensing, so that as a general practitioner he makes curious errors. These arts are crowded out by the pressure of other urgent subjects and elbowed out by the greater elegance of the more stereotyped products of the manufacturing chemists. In the teaching hospitals the pharmacopœias have been constructed with care by the clinical staff, whose favourite prescriptions have been thus handed down to the next generation and spread far and wide by the dispersal of the qualified students. Thus it comes about that the prescriptions of the great clinicians have often become known to and used by the whole profession as, for example, Sir Andrew Clark's pill, Gee's linctus and Scott's dressing.

The National Formulary arose quite otherwise from the periphery of the profession and its compilation is almost entirely the work of general practitioners. The need for it became acute with the organization of

medical benefit under the National Health Insurance Act of 1911. By this enactment the dispensing of medicines for insured persons was put into the hands of the pharmacist alone whenever and wherever there was one available, and it was laid down at the same time that the insured patient must have free choice of chemist as he had free choice of doctor. No longer therefore was the dispensing to be done by the doctor himself or his dispenser or by a particular pharmacist as the result of a private arrangement between the individual doctor and that particular chemist. The prescription had to be comprehensible by any qualified pharmacist. The increased clerical labour to the profession at once led to local arrangements towards its reduction and soon local formularies arose in urban areas. In Leicester, for instance, the pharmacopœia of the Leicester Public Medical Service was published to the chemists and thrown open to the whole local profession. Further difficulties soon arose because many doctors lived on the margins of such areas and might be on the panel of two or more Insurance Committees. Divergence of formulæ soon led to confusion and attempts were made to get formularies in relation to larger areas. Thus the Midland Group Formulary served eleven Panel Committee areas, and the North of England, Lancashire, and South-Western Formularies similarly dealt with large stretches of the country. Still the troubles of practitioners who lived on the border of such areas persisted and the Insurance Acts Committee was asked in 1924 to compile a National Formulary which should apply to the whole country. The prospects of sufficiently wide support for such a compilation were not considered good and the project did not materialize. The Ministry of Health pressed forward the idea again in 1926 on the ground of

economy, because the cost of prescribing under the N.H.I. Acts was rapidly rising and was very unequal in different parts of the country even where the conditions seemed similar. In 1927 the Conference of Local Medical and Panel Committees decided in principle that a National Formulary should be compiled and the Insurance Acts Committee appointed a subcommittee consisting of representatives from all over the country to do the work. The subcommittee was aided by representatives appointed by the National Pharmaceutical Union, who gave valuable technical help, and by representatives from the Ministry of Health.

Among others the following principles of construction were laid down by the subcommittee at the outset and logically adhered to as far as possible :—

(1) That a sufficient number of prescriptions should be available which had been found useful in the treatment of such common ailments as did not call for marked individuality in treatment. Each prescription should specify the necessary drugs with such adjuvants and flavouring agents as seemed necessary and advisable.

(2) Each prescription should have a short title which should not clash with the B.P. or B.P.C. and should mean the same formula all over the country.

(3) That a demand from any considerable body of practitioners in any part of the country for a particular formula should carry a *prima facie* right to its inclusion unless there were pharmacological or pharmaceutical objections to it. This consideration led to a considerable increase in size in the second edition, but the principle seemed to be sufficiently valuable to excuse the increase.

(4) That with rare exceptions no formula should contain a potent alkaloid unless the fact were indicated in the title.

The issue of the Formulary did not affect in any way the right of the practitioner to order for his patient such proper and sufficient medicines as he thought fit. The Formulary was offered to the profession as a means of saving time and labour but without any wish to stereotype prescribing. A collateral object of the Formulary was to discourage the use of expensive

proprietary articles in prescribing.

The second edition of the National Formulary was published in 1933 to bring it up to date and into accordance with the new B.P. The number of formulæ referred to was increased from 286 to 435. It seems a considerable increase, but it is very modest compared with a Chinese Formulary of the seventh century still extant which contains 11,886 recipes! The following examples are quoted to illustrate the usefulness of and certain difficulties encountered among the preparations in the National Formulary.

*Capsules*.—A number of capsules are included in the Formulary. Three capsules should be noted which are intended to take the place of Blaud's pill and its compounds with arsenic and strychnine. Everyone knows how difficult it is to keep the original Blaud's pill stable and yet capable of easy disintegration.

*Chlorodyne* is defined by the Formulary as meaning "tinct. chlorof. et morph. B.P. 1885." Successive issues of the B.P. have altered its composition, and the B.P. 1932 has omitted it altogether, but the conservative general practitioner still feels its value and prefers the original form.

*Collodia* comprise three preparations of salicylic acid in convenient form for the treatment of corns and warts. It is of interest that the *Regimen Sanitatis*, published towards the end of the eleventh century, states that "Willow Bark treated with hot vinegar dissolves warts." Eight centuries pass and the same remedy in modern guise is rediscovered for the same purpose.

*Collunaria* are dispensed in the convenient form of tablets, each of which dissolved in a cupful of warm water makes a solution of the required strength.

The following formula with a little colouring matter



forms a useful mouthwash which replaces the French *phénol sodique*, which has always been popular with dentists, but much less used by doctors.

Collutorium potassæ cum phenol. and gargarisma phenolis co. :—

Solution of potassium hydroxide	-	-	120 minims
Liquefied phenol	-	-	120 minims
Water	-	-	to 8 ounces

The *Emulsions* comprise two of cod-liver oil (each containing 50 per cent. of oil), alone and with hypophosphites, which closely resemble the corresponding B.P.C. preparations. There are three emulsions of petroleum with agar, kaolin and phenolphthalein with agar, respectively, the first two of which closely resemble the B.P.C. preparations. Some comment has been made on the complex formulæ of these preparations, but emulsions need careful handling if they are to be palatable and to remain stable under various conditions. In particular, many of the cod-liver oil emulsions on the market are weaker than the above and attain their palatability by reducing the active dose of the oil. Many practitioners do not realize the importance of a specified strength of these emulsions nor that the popular malt and oil is much weaker still. The equivalent doses of malt and oil, Formulary emulsions, and pure oil are 7, 2 and 1 respectively.

*Ergot*.—The method of administration of ergot was carefully considered in the light of the report of the B.P. Commission, in which it was stated that ergotoxine must be regarded as the active principle for which ergot is used in medicine and that all B.P. preparations should be standardized in these terms. The Commission also reported that the ergotoxine content of mixtures similar to those contained in the first edition of the Formulary, and in most other formularies, falls

very rapidly and disappears in a few days. The undiluted ext. ergotæ liq. is fairly stable if it is kept in a cool place. It was suggested therefore that prescribers should order it in this form, and that 60 minims given once daily diluted immediately before use would be a suitable method of administration, remembering that ergot is absorbed rather slowly. A still better method, however, is to give ergot in the form of a more stable prepared ergot. Capsules of ergota præp. have been put in the formulary, each of which contains 5 grains and corresponds in strength to 10 minims of the freshly made liquid extract.

*Guttæ* are separated into two groups as to whether they are intended for the eyes or the ears. The *Gutta auribus phenolis* is as follows :—

Glycerin of phenol -	-	-	-	-	180 minims
Glycerin -	-	-	-	-	300 minims

This should have a special note inasmuch as it is quite safe in the form given, but would become more caustic if diluted with water.

*Injectiones vaginales*.—For convenience in dispensing, four of these preparations are enumerated in a solid form. In each case a rough and ready domestic measure for dilution to the proper strength is given and works well in practice :—

Tannic acid.-	Put 4 level teaspoonfuls in 1 pint of hot water.
Alum -	„ 1 „ „ „ „
Lead acetate	„ 1 „ „ „ „
Zinc sulpho-carbolate	„ 2 „ „ „ „

*A.B.C. liniment* is defined as being composed of equal parts of liniments of aconite, belladonna and chloroform. This does not make such a good solution as when pure chloroform is substituted for the liniment of chloroform as the olive oil separates out, but the form given is much easier to rub with and is much less

irritant to delicate skins.

*Eusol lotion* embodies the experience gained in the Great War of the value of hypochlorous acid in the treatment of septic wounds. The formula is given as :—

Chlorinated lime	-	-	-	-	50 grains
Boric acid in powder	-	-	-	-	50 grains
Water	-	-	-	-	to 8 ounces

The above powders may also be kept in a dry state after mixture until required for use. They are preferably kept in the dark to prevent loss of strength.

*Mixtures* are provided in a great variety :—

*Mist. acid. acetylsal.*

Acetylsalicylic acid	-	-	-	-	7½ grains
Potassium citrate	-	-	-	-	15 grains
Chloroform water	-	-	-	-	to ½ ounce

This is a useful way of giving aspirin in soluble form. Probably the acid is decomposed by the citrate, but some clinicians value the mixture highly.

*Mist. ammon chlorid.*

Ammonium chloride	-	-	-	-	15 grains
Aromatic solution of ammonia	-	-	-	-	5 minims
Liquid extract of liquorice	-	-	-	-	15 minims
Water	-	-	-	-	to ½ ounce

This is an unpleasant mixture, but a valuable expectorant, and helps to increase the acidity of the urine. Ammonium chloride is one of the oldest chemical salts used in medicine, and is frequently mentioned in Babylonian texts perhaps 40 centuries ago under the name of “salt of Amanu.”

The *bismuth mixtures* in the National Formulary, speaking generally, contain smaller quantities of bismuth salts than are usually prescribed. The general opinion of clinicians now seems to be that antacid effects are quite as readily obtained by other carbonates which are much less constipating and also much less expensive.

*Mist. kaolin.* and *Mist. kaolin. sed.* are put in as a

result of specific requests. Most of the compilers felt that kaolin was better prescribed as a powder given in much larger quantities if its adsorptive effects on poisons or intestinal irritants was desired.

*Cough mixtures* are present in large numbers, but there will probably be none too many as every prescriber has his own favourite mixture.

*Pastes*.—The following is a useful hypertonic application for carbuncles :—

*Pasta mag. sulph.*

Exsiccated magnesium sulphate	-	-	2 ounces
Glycerin	-	-	1 ounce

*Pills*.—Extemporary pill making seems to have almost disappeared. Thompson in "The Mystery and Art of the Apothecary" recalls a grazier in Lincolnshire who in the course of 21 years swallowed 226,934 pills and had to be sued for the cost thereof by the apothecary at the Lincoln Assizes. Such enthusiasm is now extinct. Pills used now are almost entirely the standard articles of the manufacturing chemist.

*Powders*.—Powders for internal use consist only of two antacid powders. Powders for external use include a very useful Pulv. hypertonic.—the name may be illogical but the value remains.

Common salt, 4 parts  
Sodium citrate, 1 part.

Two heaped teaspoonfuls dissolved in half a pint of warm water form Sir Almroth Wright's hypertonic solution for the treatment of wounds.

*Spirits*.—The Board of Customs and Excise has recently produced fresh regulations with regard to the use of industrial methylated spirits and some confusion of nomenclature has followed. A prescription for surgical spirit unless more exactly defined may result

in the dispensing of one of three preparations :—

(1) *Spiritus antisepticus* (surgical spirit) N.F. means industrial spirit with castor oil ( $2\frac{1}{2}$  per cent.) and boric acid.

(2) Surgical spirit No. 1 means industrial spirit with castor oil (2·5 per cent.), methyl salicylate (0·5 per cent.) and ethyl phthalate.

(3) Surgical spirit No. 2 means industrial spirit with castor oil (2·75 per cent.), mineral naphtha and ethyl phthalate.

It is also worth noting that industrial methylated spirit as usually supplied contains acetone. If iodine is mixed or otherwise used with it the very unpleasant pungent vapour of iodo-acetone is generated. Surgeons who have occasion to use spirit and iodine should use the special acetone-free form of methylated spirit.

*Tablets.*—Tablets stann. co. consisting of tin, 1·7 grains, and sub-oxide of tin, 0·3 grains, are for treatment of staphylococcal infections of the skin. Tablets of thyroid gland of various sizes are given, but it should be noted that in accordance with the new B.P. the strength is expressed in terms of dried gland and they are therefore five times as strong as the tablets of the same title expressed in terms of the fresh thyroid of the B.P. 1914.

*Unguenta.*—The following prescription has been inserted in a second edition as a useful sedative application for inflamed piles :—

*Unguentum bismuthi cum camph.*

Liquefied phenol	-	-	-	-	18 minims
Camphor	-	-	-	-	$3\frac{1}{2}$ grains
Bismuth carbonate	-	-	-	-	$\frac{1}{2}$ ounce
Zinc ointment	-	-	-	-	$\frac{1}{2}$ ounce
White soft paraffin	-	-	-	-	to 1 ounce

*Vapores.*—Two sorts of vapours are included, one for inhalation from boiling water and the other for

direct medication by the use of a Burney Yeo's inhaler. The two latter useful preparations are as follows:—

*Vapor creosot. æther.*

Creosote	-	-	-	-	-	120 minims
Liquefied phenol	-	-	-	-	-	120 minims
Spirits of chloroform	-	-	-	-	-	120 minims
Weak tincture of iodine	-	-	-	-	-	60 minims
Spirits of ether	-	-	-	-	-	60 minims

*Vapor formalin.*

Formaldehyde solution	-	-	-	-	-	30 minims
Chloroform	-	-	-	-	-	60 minims
Menthol	-	-	-	-	-	10 grains
Oil of pine	-	-	-	-	-	10 minims
' Spirits of chloroform	-	-	-	-	-	up to 1 ounce

The above examples do not in any sense intend to be exhaustive as the book itself is probably in the hands of most of my readers. By reason of its special purpose prescriptions for children are entirely excluded. Similarly formulæ not usually used except by specialists in various departments are not included. Bearing in mind therefore the special end in view, the very widespread adoption of the National Formulary is probably a proof of its practical utility. That the field for its application is wide is shown by the fact that 57,986,980 prescriptions were dispensed by chemists under the National Health Insurance Act in England in 1934.



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